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P.O. Box 643, Cape Town Posbus 643, Kaapstad

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Cape Town Post-Graduate Medical Association

ELI LILLY MEDICAL RESEARCH FELLOWSHIP (SOUTH AFRICA)

1. The Cape Town Post-Graduate Medical Association invites applications from suitably qualified medical practitioners for the Eli Lilly Medical Research Fellowship (South Africa).

2. The award will be made by a Selection Committee of the Cape Town Post-Graduate Medical Association.

3. The Fellowship is for the purpose of medical research and is not intended for post-graduate clinical study. It is available for one year.

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5. Other things being equal, preference will be given to candidates under 40 years of age.

6. Any medical practitioner *registered* in South Africa will be eligible for this award.

7. There will be no discrimination for the award on grounds of race, colour, creed or sex.

8. The candidate must submit evidence of his capacity to do original research work.

9. The candidate must submit a programme of the proposed research. He is advised to submit an alternative scheme in case there are difficulties about carrying out the first one.

10. It is advisable for the candidate to indicate at what institution he proposes to undertake the research and he should also state whether he is in a position to make any arrangements to carry out the research at the proposed institution.

11. The successful candidate must undertake to return to South Africa for a period of at least two years after the termination of the award.

12. Applications should be forwarded to reach:

The Honorary Secretary,
Selection Committee,
Eli Lilly Medical Research Fellowship (South Africa),
Cape Town Post-Graduate Medical Association,
P.O. Box 2980,
Cape Town,

not later than 15 May 1953.

They should be acompanied by recent testimonials and, if possible, the names of not more than two suitable referees.

L. Eales
Honorary Secretary

Cape Town
10 January 1953

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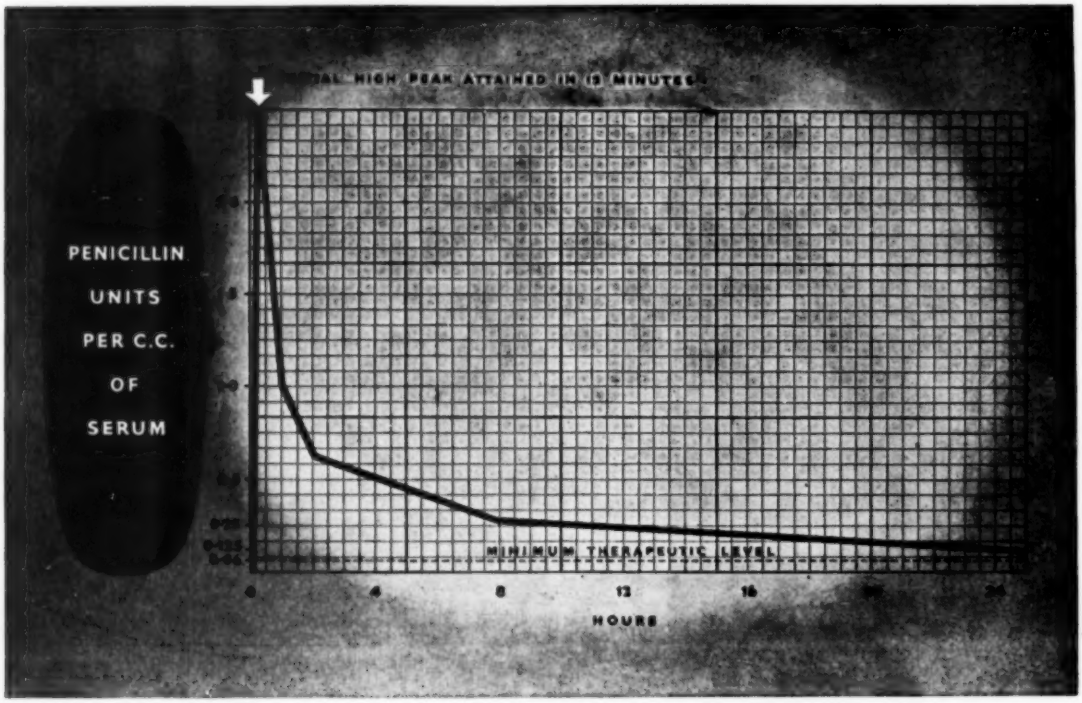

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TRAUMATIC PSEUDO-CYST OF THE PANCREAS

CASE REPORT

L. MACE DAVID, M.B., F.R.C.S.

and

FRANK GREENWOOD, M.R.C.S., L.R.C.P., D.T.M. & H., D.M.R.E.

Johannesburg

Trauma to the abdominal viscera has become more frequent with increasing mechanization in both industry and agriculture. Direct trauma to the pancreas is, however, uncommon owing to its protected situation in the abdomen. A pseudo-cyst of the pancreas may, however, arise from such trauma and in both the textbooks and collected cases it is commonly stated that trauma is the commonest cause of such a pseudo-cyst.[1, 2, 3]

Reports of actual cases in which a single trauma has been obviously associated with such a cyst are not, however, common. The clinical and radiological features of such a case and the treatment adopted are here recorded.

Three points of interest arise in this case:

1. *The extreme rapidity of the cyst formation following trauma.* The patient was seen immediately after the accident and no tumour mass was palpable then or during the following 10 days in hospital. On the 15th day a tumour, the size of a small football, was readily palpable and easily demonstrable radiologically. There is thus excellent correlation of a single localized injury with the formation of the cyst. Lloyd [4] first pointed out this connexion in 1892. Korte [5] gave an incidence of trauma in 33 cases out of 117, Meyer [6] 16 in 31 cases (51.6%) and Pinkham [7] 20% of all cases. The variation in the figures probably relates to the age and occupational groups studied.

2. *The rapid recovery of the patient following anastomosis* of the cyst to the small bowel and its drainage through this channel. The operative measures which have been suggested and tried for the relief of the condition are:

(a) Complete extirpation—this is usually impossible owing to the friable condition of the tissues around.

(b) Marsupialization to the anterior abdominal wall with drainage—this has proved highly unsatisfactory and persistent sinuses up to 15 years have occurred together with some autodigestion of the abdominal wall.

(c) Anastomosis of the cyst to a hollow viscus. Walzel and Neuffer [8] anastomosed to the gall bladder and Jedlicka [9] to the posterior wall of the stomach, both with variable results. Adams and Nishijima [10] reported anastomosis to the jejunum with auxiliary jejuno-jejunostomy, with rapid convalescence and cure, but Meyer [6] reported a 100% mortality in his 2 cases treated in this way. This was the method successfully adopted in the present case.

3. *The rapid closure of the stoma between the cyst and the jejunum* 3 weeks after operation. At this time it was impossible to demonstrate radiologically any connexion between the two. Adams [10] also found this closure in his successful cases whereas Meyer [6] found that in 1 of his fatal cases, a communication was still present on post-operative X-ray examination.

CASE HISTORY

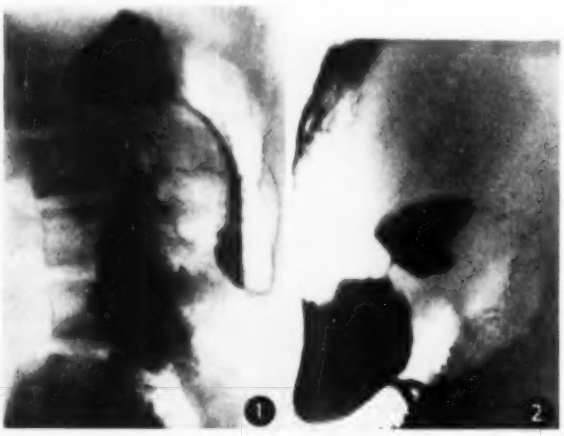
On 9 April 1952, J. L. S., a coffin-maker aged 33 years, was struck in the right hypochondrium by a 14-ft. length of timber, 1¼ inch by 1 inch in cross-section. The force of the impact left the outline of the wood imprinted on the skin. He was seen within half an hour of the injury by Dr. J. Joubert and admitted with a provisional diagnosis of rupture of the liver.

On examination an hour later the patient was still complaining of severe pain in the right hypochondrium and vomiting. The blood pressure was 90/40 mm. Hg, and examination of the abdomen showed rigidity and guarding of the right upper rectus with soft abdominal muscles elsewhere. The imprint of the plank was still visible. On auscultation bowel sounds were heard and rectal examination was negative. The temperature was sub-normal and the pulse rate 86 per minute. Examination of the vomit at this stage showed normal gastric contents and no evidence of blood. Intravenous fluids were given and Wangensteen suction instituted. Three hours later the patient's general condition showed very considerable improvement though some guarding of the right upper rectus was still present and pain was still complained of in this area. Bowel sounds were still present on auscultation. During the following 12 hours further improvement took place and the abdominal rigidity became less. A diagnosis of haemorrhage into the right rectus muscle was made at this stage and a decision against operation was taken.

On the third day the intravenous therapy and Wangensteen suction were discontinued; the patient was allowed out of bed on the eighth day and discharged on the 11th day after the accident.

On 24 April 1952 (15 days after the accident) the patient returned for re-examination with a view to resuming work. He stated that he felt very well; had a good appetite and no nausea or vomiting but on further questioning stated that he was unable to walk any distance and could not carry himself in an upright position. On examination, a mass, the size of a small football, was detected occupying the left hypochondrium and extending slightly over the mid-line. The mass was fluctuant and tender but could not be moved. A clinical diagnosis of pseudo-pancreatic cyst was made and the patient was referred for X-ray examination.

X-ray Examination. X-ray examination showed a large rounded soft tissue mass occupying the left hypochondrium and passing over the mid-line. A barium meal examination showed that this mass displaced the stomach forward and to the left and the splenic flexure of the colon downwards. There was no evidence of any fixation of any of the abdominal contents to the mass and the radiological diagnosis confirmed the clinical diagnosis of a pseudo-cyst of the pancreas (Figs. 1 and 2).



Figs. 1, 2. Erect and supine lateral views to demonstrate the forward displacement of the barium-filled stomach by the pseudocyst.

Special Investigation: *Blood diastase* before operation, 530 units diastase %. Haemoglobin, 14.6 gm. %. Erythrocytes 4,870,000 per c.mm. Leukocytes 7,800 per c.mm. Neutrophils 69.5%. Monocytes 5%. Lymphocytes 25%. Eosinophils .5%. Red cells show slight anisocytosis.

TREATMENT

On 7 May 1952 a laparotomy through a left paramedian incision was performed. A large cyst was found in the left hypochondrium displacing the stomach to the right and the transverse colon downwards. The cyst was exposed through the gastro-colic ligament and 170 c.c. of black fluid aspirated through a large-bore needle. The cavity of the cyst was then explored by the finger to break down loculations. A loop of jejunum was brought up through the transverse mesocolon and anastomosed to the cyst. This anastomosis was difficult owing to the friable cyst wall. A jejuno-jejunostomy was performed 6 inches from the line of the anastomosis with the cyst. The abdomen was closed without drainage. For the first 48 hours after operation the patient's fluid balance was maintained intravenously. Fluid was allowed by mouth on the third day and citrated milk on the fourth day. Following this the patient was allowed to get up and Meulengracht's diet allowed. Convalescence was without incident.

The fluid contained 3,200 units of diastase % and no bile was present in the fluid.

Fig. 3. Erect lateral view to show the diminution in the size of the pseudocyst after operation.
Fig. 4. Prone view after operation. The anastomosis between the cyst and the jejunum is arrowed.

A final X-ray examination was carried out on 29 May 1952 (Figs. 3 and 4) and the site of anastomosis of the cyst to the small bowel could be demonstrated but no barium passed into the cyst. There was still a minimal forward displacement of the stomach but the volume of the cyst had been greatly reduced.

SUMMARY

A case of traumatic pseudo-cyst of the pancreas successfully treated by anastomosis of the cyst to the jejunum and auxiliary jejuno-jejunostomy is reported. The relevant clinical, radiological and operative findings are discussed and its operative treatment described.

The patient was admitted under the care of Dr. J. Joubert and our thanks are due to him for permission to publish the case.

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VAN DIE REDAKSIE

STOLLINGSFAKTORE

Dit wil voorkom of ‚nuwe stollingsfaktore' met onrusbarende snelheid ontdek word, en dat die eertydse eenvoudige teorie van bloedstolling verdwyn het in 'n warboel van botsende menings wat vir baie van ons te ingewikkeld is om te volg.

Dit is derhalwe belangrik om daarop te wys dat meeste van die sogenaamde faktore slegs verskynsels is wat in 'n toetsbuis voorkom en dat baie van die faktore wat beskryf word dieselfde onder 'n ander naam is.

Die moeilikheid ontstaan omdat ons enigste objektiewe bewys van die voltooiing van die stollingsproses die vorming van 'n klont is. Wat in die toetsbuis gebeur voordat die klont vorm, kan slegs vermoed word. As die toestande waaronder die eksperiment uitgevoer word voldoende gestandardiseer is, mag ons in staat wees om tot gegronde gevolgtrekkings te geraak.

Aangesien ons baie min weet van wat in die toetsbuis aangaan terwyl ons wag vir 'n klont om te vorm, is dit nie verbasend dat verskillende waarnemers van dieselfde eksperiment tot heeltemal verskillende gevolgtrekkings mag geraak nie. Selfs die eksperimente, hoewel dit as dieselfde voorkom, mag heeltemal verskillend wees.

Al die werkers probeer die faktore, met uitsondering van die een wat getoets word, konstant hou, en die tyd wat die brousel neem om te stol word beskou as 'n indeks van die hoeveelheid van die onbekende faktor wat aanwesig is. Dit is wat gedoen word, bv. met die meting van protrombien. Tog word dit meer en meer besef dat ons nie in staat is nie om protrombien-tekort vas te stel nie. Die rede hiervoor is omdat die stolling van die bloed nie net die totaal van die aanwesige faktore is nie maar ook die resultaat van hierdie totaal min die faktore wat die proses hinder. Aangesien ons feitlik geen kennis het van hierdie hindernisse nie, en aangesien hulle by verskillende bloedmonsters van bloed in getalle wissel, is dit nie verbasingwekkend nie dat die bloedstollingstyd by enige besondere eksperiment onder betreklike kunsmatige kondisies uitgevoer, mag wissel nie. Dit is werklik verbasend dat heelwat ooreenkoms bestaan!

Wanneer 'n eksperiment 'n nuwe verskynsel ontbloot, word aan hierdie sogenaamde nuwe faktor 'n naam gegee. Meeste werkers aanvaar nou dat faktor V van Owren (onlangs hernoem proaccelerin), plasma-AC-globulien van Seegers, die labiele faktor van Quick, die faktor van Fantl en Nance en selfs trombogeen wat Nolf byna 50 jaar gelede beskryf het, moontlik identies is. Hulle is almal benamings vir 'n bestanddeel teenwoordig in plasma wat onontbeerlik is vir die omsetting van protrombien in trombien. 'n Tekort aan hierdie faktor mag oënskynlik oorerflik wees en mag selfs 'n familietekort [1] wees, of dit mag as gevolg van 'n lewersiekte ontstaan.

Verdere moeilikhede kom te voorskyn wanneer ander

1. Brink, A. J. en Kingsley, C. S. (1952): Quart. J. Med., **21**, 19.

EDITORIAL

COAGULATION FACTORS

New 'coagulation factors' appear to be discovered with alarming frequency and the once simple theory of blood coagulation has disappeared in a maze of conflicting ideas almost too complex for many of us to follow.

It is important, therefore, to reflect that most of the so-called factors are merely phenomena which occur in a test tube and that many of the factors described are the same but under another name.

The difficulty arises because our only objective evidence of the completion of the clotting process is the formation of a clot. What happens in the test tube before the clot forms can only be surmised. If the conditions of the experiment are sufficiently standardized, we may be able to draw valid conclusions.

Since we know very little about what goes on in the test tube while we are waiting for a clot to form, it is not surprising that different observers may draw completely different conclusions from the same experiment. Even the experiments, while appearing to be the same, may be entirely different.

All workers attempt to keep the factors constant with the exception of the one being tested and the time the brew takes to clot is regarded as an index of the amount of the unknown factor which is present. This is what is done, e.g. in the measurement of prothrombin. Yet it is becoming more widely recognized that we are unable to estimate prothrombin in blood. All we are able to do is to estimate prothrombin efficiency. This is because the coagulation of the blood is not only the sum of the factors which are present, but it is also the result of this sum less the factors which inhibit the process. As we have practically no knowledge of these inhibitors and as they vary in amount in different samples of blood it is not surprising that the time the blood takes to clot may vary in any particular experiment done under relatively artificial conditions. It is really surprising that so much agreement exists!

When an experiment discloses a new phenomenon a name is given to this so-called new factor. It is now becoming accepted by most workers that factor V (more recently renamed proaccelerin) of Owren, plasma AC-globulin of Seegers, the labile factor of Quick, the factor of Fantl and Nance and even Thrombogene, which Nolf described nearly 50 years ago, are probably identical. They are all names for a substance present in plasma which is essential for the conversion of prothrombin to thrombin. Deficiency of this factor may apparently be congenital and even familial [1] or it may be acquired as in liver disease.

More difficulty arises when other factors are considered. A number of 'factors' has been described occurring in

1. Brink, A. J. and Kingsley, C. S. (1952): Quart. J. Med., **21**, 19.

faktore oorweeg word. 'n Aantal faktore is beskryf wat in serum aangetref word wat vermoedelik hul ontstaan aan voorgangers in plasma te danke het.

Seegers het vir sodanige 'n stofsoort die naam serum-AC-globulien voorgestel. Alexander [2] het beweer dat hierdie stofsoort uit 'n mengsel bestaan het van plasma-AC-globulien en 'n ander stofsoort deur hom SPCA (*serum prothrombin conversion accelerator*) genoem. Daar is nou bewyse [3] dat SPCA en sy voorloper in plasma geheel-en-al van plasma- of serum-AC-globulien onderskeie is. Dit is waarskynlik dat SPCA identies is met faktor 7 van Koller,[4] met prokonvertien van Owren,[5] en met ko-tromboplastien van Mann,[6] almal waarvan in dicoumarol of tromexan-plasma gereduseer is. Hul bespoedig die vervaardiging van trombien uit protrombien. Die vraagstuk word bemoeilik omdat meeste navorsers nie daarin geslaag het nie om suiwer faktore te verkry nie en baie van die eksperimente is met mengsels van plasma- en serumbestanddele gemaak. Die resultate wat verkry is, hang grotendeels af van die mate van suiwerheid (of andersins) van hierdie sogenoemde suiwer faktore.

Dit sal baie tyd en werk vereis voordat die getal nuwe faktore beheerbare verhoudings bereik. Selfs dan mag die hele proses herhaal word, wanneer 'n reeks nuwe verskynsels beskrywe word.

Dit sal slegs met verloop van tyd duideliker word of 'n nuwe faktor tevoorskyn getree het en of daar vir hierdie verskynsels rekenskap gegee kan word deur 'n effense wysiging van meer algemeen aanvaarde teorië.

Gelukkig is baie min hiervan klinies belangrik, hoe interessant dit ookal teoreties mag wees. Die vasstelling van protrombien-doeltreffendheid is genoeg om antistollingsterapie te beheer en kliniese sindrome as gevolg van 'n tekort aan hierdie nuwe faktore is buitengewoon en dis onwaarskynlik dat hulle teëgekom sal word. Nietemin sal betekenisvolle vorderings verwesenlik word as gevolg van die aktiewe werk wat op hierdie gebied gedoen word.

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6. Mann, F. D., Barker, N. W. en Hurn, M. H. (1951): Blood, **6**, 838.

serum which must presumably have originated from precursors in plasma. Serum AC-globulin was the name proposed by Seegers for such a substance. Alexander [2] suggested that this substance consisted of a mixture of plasma AC-globulin and another substance termed by him SPCA (serum prothrombin conversion accelerator). There is now evidence [3] that SPCA and its precursor in plasma is quite distinct from plasma or serum AC-globulin. SPCA is probably identical with factor 7 of Koller,[4] with proconvertin of Owren [5] and with co-thromboplastin of Mann,[6] all being reduced in dicoumarol or tromexan plasma. They accelerate the production of thrombin from prothrombin. The problem is complicated because most workers have not succeeded in obtaining pure factors and many of the experiments have been done with mixtures of plasma and serum components. The results obtained depended largely on the degree of purity (or otherwise) of these so-called pure factors.

It will require a great deal of time and labour before the number of new factors reaches manageable proportions. Even then the whole process may well be repeated as a series of new 'phenomena' are described.

Only with the passage of time will it become clearer whether a new factor has emerged or whether these phenomena can be accounted for by a slight variation of more generally accepted theories.

Fortunately very little of this is important from a clinical point of view, however interesting it may be theoretically. The measurement of prothrombin efficiency suffices to control anticoagulant therapy and clinical syndromes resulting from a deficiency of these new factors are rare and unlikely to be encountered. Nevertheless, from the active work proceeding in this field, significant advances cannot fail to materialize.

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THE PRESENT-DAY SCOPE OF CARDIO-VASCULAR SURGERY*

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The term 'heart disease' has always struck an ominous note and consequently during the past 10 years great public and medical interest has been focussed on the new form of surgery being performed on the heart and great vessels.

The heart, as we know, is a finely adjusted organ which responds to the slightest emotional or physical changes which occur in the body. The idea that such a delicately balanced organ is itself delicate has, to a large extent, been fostered by those writers who consider that the heart is sensitive to such a degree that the slightest touch would terminate its action. Physiologists, however, are tending to formulate the view that a muscular organ such as the heart, which contracts approximately 70 times per minute day in and day out for approximately 70 years, is most probably an extremely hardy structure. Surgical explora-

* A paper read at the South African Medical Congress, Johannesburg, September 1952.

tion in recent years has indicated that the heart is probably one of the toughest organs of the body. Admittedly it is controlled by a very delicate nervous mechanism but, in its normal state, the heart simply performs its functions in a similar way to any other effective muscular tissue. In previous years it has been the physician who evidenced the most interest in cardiac function because the heart was regarded as being surgically inacessible. Consequently there was much progress in the medical treatment of these cases of heart disease but, despite this, the considerable mortality has eventually led to the arousal of surgical interest in the behaviour and action of the heart.

The modern treatment of heart diseases is, in fact, a triumph for all branches of medicine. The pathologists and embryologists have studied the heart in its normal and abnormal development, while the clinicians, faced with the treatment of congenital abnormalities of the heart, have, in consultation with the pathologists, attempted to find methods of correction of these abnormalities and deformities. The experimental anatomists, anaesthetists and surgeons form the final group of the team of workers responsible for this new and progressive form of surgical treatment.

CLASSIFICATION OF CARDIO-VASCULAR DISORDERS

Thirteen years ago heart diseases were simply classified into 2 groups—congenital and acquired, and of these ductus arteriosus was the only condition for which surgical treatment was employed. In 1939 Gross treated this abnormality and thus heralded what might well be regarded as a new era in surgery. The previous classification was soon dismissed as inadequate as it was too wide and, with time, the congenital group of cardiac abnormalities was subdivided into cyanotic and acyanotic forms. The acquired forms of heart disease were still broadly regarded as the conditions which could develop in a normal heart during the life-span.

Heart disease, of course, may exist without the presence of symptoms and the pre-existing abnormality is only recognized when the mechanism breaks down. Cyanosis, if present, naturally draws attention to an existing abnormality at an early stage. However, in the medical or acquired type of heart disease the symptoms indicate that all is not well with the cardio-vascular system. Heberden clearly described the symptom of pain due, he stated, to a heart abnormality described as angina pectoris and Hunter, the well-known anatomist, stated that his life was in the hand of the first rascal who ventured to excite or enrage him.

The main symptoms of heart disease are pain and dyspnoea and, in the advanced forms, signs of failure and decompensation. Perhaps a more helpful classification, applicable to both the congenital and the acquired conditions, would be to divide the cases into a group free of symptoms and a group which may suffer from cyanosis, pain, dyspnoea or cardiac failure.

The modern forms of cardio-vascular surgery are, therefore, directed towards the correction of existing congenital abnormalities and the alleviation of symptoms and improvement of function in acquired conditions. Many of the acquired abnormalities are due to conditions which, if recognized and treated at their inception, need never be permitted to lead to cardiac damage. I refer here to infections such as rheumatic fever and syphilis. Syphilis of the cardio-vascular system is becoming a rare disease to-day and, with modern therapy, the cardiac complications of rheumatic fever should become equally uncommon.

DIAGNOSIS OF CARDIAC DISEASE

It is not necessary to detail the diagnosis of cardiac disease to a meeting of physicians, but a few important features are worth stressing as they indicate whether the patient is likely to benefit from surgery or not.

History. The story obtained from the patient or the patient's relatives is usually important, e.g. the mother may state that the child, from early infancy, has had difficulty with swallowing accompanied often by coughing attacks, during which the child becomes intensely cyanosed. Such a story indicates the probable presence of a congenital aortic ring causing pressure on the oesophagus. Such congenital aortic rings are associated with congenital abnormalities of the heart. Alternatively the mother may state that from birth onwards the child has always been deeply cyanosed.

Clinical Examination. Some of the congenital abnormalities are symptomless and the abnormality may only be discovered on routine general examination of the infant or child. The examination of a new-born child is not complete without testing for the presence of pulsation of both iliac arteries, for in coarctation of the aorta, iliac artery pulsation is absent. Mothers have reported that they have noticed an abnormal thrill in the infant's chest when nursing, an observation which, if clinically confirmed by auscultation, would indicate the presence of a persistent ductus arteriosus.

Naturally where cyanosis is present, immediate attention becomes drawn to the cardio-vascular system.

Frequently, even though the murmurs are clearly distinguished, it is not possible to state precisely the nature of the existing congenital lesion.

Where there is no cyanosis, abnormal murmurs may be heard on a routine auscultation. Any murmur should be investigated, as to-day we are learning that many cardiac abnormalities have been overlooked as a result of the casual designation of the 'physiological systolic murmur'.

Radiographic Examinations. Three examinations are almost indispensable to the determination of cardiac abnormalities:

1. *Ordinary Radiographic Examination.* This is the most important and includes not only the examination of the films, but also the examination of the patient under the fluorescent screen. The patient must be examined carefully, the heart outline must be determined and the particular appearance and movement of the different heart chambers must be noted. Furthermore, the pulsation and movement of the great vessels arising from the pulmonary roots must be visualized.

The special radiographic investigations also incorporate an examination following a barium swallow which may, from the appearance of the oesophagus, suggest the position of an unusually situated aorta in Fallot's tetralogy.

2. *Angiocardiography.* This is a special form of radiographic examination which requires skill for its execution and definite experience and judgment for its interpretation.

The films are usually taken in 2 positions, the antero-posterior and the oblique.

A properly conducted investigation will not only allow of the examination of all the chambers of the heart, but will also indicate the size, presence and position of the normal and

abnormal vessels. It is also essential to note when the opaque medium reaches and fills the great vessels.

Angiocardiography, which is an extremely skilled and specialized investigation, is carried out with the assistance of radiographers and radiologists, though its interpretation usually lies beyond the field of the ordinary radiologist.

3. *Cardiac Catheterization.* The blood pressures and oxygen saturation in the different chambers of the heart can be estimated, though normally only the right auricle, ventricle and pulmonary arteries can be catheterized. If the catheter passes into the left side, it suggests that abnormal communications exist between the right and left sides of the heart.

The catheter must be guided into the cardiac chambers under the fluorescent screen.

Though great care must be exercised in the estimation of the pressures and oxygen saturations, this procedure, like angiocardiography, is virtually non-dangerous. The information obtained is of great value and may establish the diagnosis in certain congenital heart lesions.

Special Investigations

1. *The Blood Count.* A complete and reliable blood examination is necessary in all cases of heart disease, whether cyanosis is present or not. A haematocrit, haemoglobin and red cell count are the most essential, but the full investigation should be done in all cases in order to arrive at a complete assessment of the blood picture.

2. *Electrocardiographic Examination.* All cases should have a full electrocardiographic examination. Many surgeons feel that this procedure, as well as the angiocardiographic examination, is unnecessary and unimportant. My own feeling is that one can never have too many facts in dealing with problems such as heart abnormalities and the time consumed in their execution is fully justified by their undoubted diagnostic and surgical value.

3. *Thoracoscopy.* Examination through a thoracoscope may often give helpful information about the pleural space. It may be possible to visualize the heart and some of the great vessels and in cases of persistent ductus arteriosus and coarctation of the aorta this procedure may be of inestimable value.

My purpose in introducing this discussion on the diagnosis of cardiac lesions is to emphasize the fact that a cardiac operation is not only the concern of the surgeon. It is usually not possible for the surgeon to perform his own angiocardiography, electrocardiography and special investigations. The opinion of a single person should not be accepted as final and for that reason I consider that all cases should be investigated by a panel of experts, including a physician, a radiologist and a surgeon. There can be no doubt that in time some of these special investigations will be deemed unnecessary, but until cardio-vascular surgery is on a completely established and confirmed basis, one cannot ignore the acquisition of additional data.

CARDIAC OPERATIVE PROCEDURES

Operations for the Correction of Congenital Abnormalities

The 2 conditions which most commonly benefit from surgical treatment are persistent ductus arteriosus and coarctation of the aorta. These conditions often remain unrecognized until the child is several years of age, though occasionally an astute physician diagnoses them at a very early stage. The optimum time for operation differs in these 2 cases. It is suggested that infants with persistent ductus arteriosus should have their operations as soon as the diagnosis has been made. In my experience most of the cases are diagnosed when the child is about 3 or 4 years of age, which is very suitable from the surgeon's point of view. The operation for the ductus arteriosus abnormality is corrected by closure of the ductus. If possible, it should be divided. Some surgeons advocate the division in all instances. If this is possible it is apparently the treatment of choice, but where the communication is very short and wide, division may be impossible and simple ligature is the best and safest procedure. Two or three non-absorbable ligatures are employed to tie off the structure and the mediastinal pleura is then repaired. The operation is usually completed in under an hour.

The condition of coarctation of the aorta may have been determined in very early infancy by the absence of iliac and femoral pulsations or it may have become evident in later life by the presence of hypertension. The repair of the aorta is not a difficult procedure. The optimum time for operation depends, of course, on the ease with which the aorta can be repaired after the coarcted segment has been removed. In the so-called infantile type the narrowed area is too diffuse to allow for simple resection and end-to-end anastomosis, though the adult or localized type is more amenable to this form of treatment. The operation is performed when it is possible to join the 2 divided ends of the aorta with the hope that the repaired site will adapt itself to the growth of the child. Consequently, the operation should not be performed in very early infancy. Though the operation itself is not difficult, the profuse haemorrhage from the numerous collateral vessels may be troublesome. The operation is of comparatively recent origin and though one cannot be absolutely certain of the ultimate result, the immediate effect in many patients is dramatic and beneficial. In cases of diffuse coarctation of the aorta the question of aortic grafts must be considered. In the United States there are banks which store segments of aorta for use in patients suffering from the diffuse form of aortic abnormality. The affected segment can thus be removed and replaced by the graft of aorta, which has been kept in a deep-freeze storage chamber.

These 2 conditions usually show no evidence of cyanosis. Occasionally other abnormalities co-exist. It is of the utmost importance to ascertain whether other defects are present before operation is contemplated. This is one of the reasons for the emphasis I have laid on the all-important pre-operative investigations.

Though the presence of aortic rings and other vascular abnormalities may have led to difficulty in swallowing and choking attacks, the exact condition can only be detected when the child is completely investigated. Exploration of the thorax and the repair or division of abnormal communications will relieve the obstructive symptoms. These conditions are more frequently diagnosed to-day as a result of the improved investigational facilities.

Children with septal defects in the heart which cause murmurs but no cyanosis are frequently referred for examination. The exact septal defect can usually only be detected after full investigation, including angiocardiography, which generally provides the clue. To date but few operations for the repair of these defects have been carried out but we will undoubtedly see many advances along these lines in the near future.

In cases of pure 'pulmonary stenosis' the blood finds its way from the right auricle to the left auricle through the foramen ovale and in consequence venous blood reaches the left ventricle, from where it is pumped up into the systemic circulation, producing a cyanosed appearance. This abnormality is due to a narrowing of the

pulmonary artery valve alone, either in its valvular area or in its sub-valvular region. Sellors and Brock have corrected this deformity by means of an intra-cardiac operation which restores the heart to a more or less normal state.

IMPROVEMENT OF CARDIAC FUNCTION BY MAKING NEW VASCULAR CHANNELS

Cardiac improvement can be obtained for the large group of abnormalities known as Fallot's tetralogy by securing new vascular communications. Cyanosis is the main symptom of this group. The children are usually cyanosed from birth and as the years pass they evidence even more definitely the symptoms associated with this congenital abnormality. When the Fallot's tetralogy is investigated more fully, by means of angiocardiography, it is found that the condition can adopt a variety of forms. The 4 essential factors may all be present and yet one type appears quite different from the other. It may often be difficult at first to distinguish the form in which the aorta is situated on the right side. This is usually only discovered by special radiographic examination. It is important from the surgeon's angle because the Blalock operation depends on the anastomosis of the subclavian artery to the pulmonary artery. It may not be possible to perform the operation on the usual side, i.e. the left side, if the subclavian artery is abnormally situated. If no separate subclavian artery is present, this operation may have to be done on the right side with a right-sided aorta. The use of the innominate artery is usually contra-indicated because, although the operation itself is simple, one side of the brain would be deprived of most of its blood supply. Potts, in order to overcome this difficulty, devised his operation of anastomosis between the aorta and the pulmonary artery, a procedure which is as successful as the Blalock operation. In my opinion the subclavian artery anastomosis should be done in preference to the aortic-pulmonary anastomosis because the use of a great vessel such as the aorta exposes the patient to an increased hazard.

Many cases diagnosed as Fallot's tetralogy are disproved on investigation, e.g. tricuspid atresia with cyanosis as an outstanding feature. In this condition the blood shunt is from the right to the left auricle and thence into the large left ventricle. There is narrowing or absence of the tricuspid valve so that very little of the blood passes from the right side of the heart into the lung circuit. The blood supply of the lungs becomes dependent on the bronchial vessels as a result of this inadequate right ventricle and right pulmonary artery. It is important, therefore, to know the state of affairs before operation is contemplated. Further evidence is obtained by means of an electrocardiographic examination, which shows that the cyanosis is present in a patient with left ventricular hypertrophy. Angiocardiograms will clearly illustrate the anatomical defect in the heart.

In certain cases of Fallot's tetralogy, the pulmonary stenosis consists of narrowing of the pulmonary valve. Sellors and Brock, being desirous of dealing with this directly, decided to enlarge this valve, thereby overcoming one of the abnormalities in the tetralogy without providing an extra abnormality, such as the subclavian pulmonary artery shunt. This direct approach is of particular value in the so-called pure type of pulmonary stenosis, but can be used in the ordinary Fallot's tetralogy where the pulmonary stenosis is the outstanding feature. If the stenosis is valvular, simple dilatation of this valve may be sufficient. If, however, there is an associated subvalvular stenosis which would necessitate removal of the infundibulum, which extends between the right ventricle and the pulmonary artery, a trans-cardiac approach must be employed, i.e. the entire operation is performed through the right ventricle. This operation carries a higher mortality than the Blalock operation for simple subclavian pulmonary artery anastomosis. Though time alone will tell whether the direct approach of Sellors and Brock or the indirect approach with the creation of a new vascular channel, as used by Blalock and Potts, is the more efficacious, there can be no doubt that sufferers with congenital cyanotic disease of heart can now be aided considerably.

It has been found that cases exist in which it is impossible to perform an operation on the pulmonary valve or in which there are no pulmonary arteries for anastomotic purposes, i.e. cases with absent right ventricle or absent pulmonary arteries. Barrett found that the simple procedure of inspecting the pleural cavity was followed by improvement because the resulting adhesions between the lung and the chest wall was fo'lowed by new blood vessel formation. If one is certain that there is no pulmonary arterial supply, the simple induction of a pneumothorax and the introduction of blood or some similar irritant into the pleural space will result in the obliteration of the space. The formation of new blood vessels may help to reduce the cyanosis.

Sweet described an operation for the relief of pulmonary oedema due to mitral stenosis, by the formation of a new vascular communication which relieved the pressure in the lung field. This operation involved the anastomosis between the azygos vein and the inferior pulmonary vein on the right side and it was found that patients with high pulmonary pressure definitely benefited from this procedure. It is, however, a difficult operation which requires the use of a special form of link to join these 2 veins. Veins, ordinarily, are very thin walled and it is usually impossible to anastomose them directly by stitching. An improved technique for patients suffering from high pulmonary pressure due to mitral stenosis, has been devised and will be described later in this paper.

THE TREATMENT OF ACQUIRED CARDIAC LESIONS

A discussion of tumours of the heart, foreign bodies in the heart, wounds of the heart and suppurative pericarditis falls beyond the scope of this paper.

Infections due to syphilis and rheumatic fever are responsible for most acquired cardio-vascular lesions. It is now possible to deal with syphilis adequately in its early stages before any damage to the heart has occurred, so this condition need not absorb too much of our time, though occasionally aneurysms of great vessels are found in patients who deny that they have ever suffered from any syphilitic infection. Our main concern is to deal with the cardiac damage caused by rheumatic fever, a disease which is widespread throughout the world. With the aid of modern therapeutics, rheumatic fever, if recognized, can

be controlled before it has caused cardiac damage. Mitral stenosis, one of the most sinister complications of rheumatic fever, is now being dealt with surgically. During the last few years this operation has been performed frequently in all parts of the world and mitral valvotomy is an every-day procedure in most chest units. There are definite indications for and contra-indications to the operation. It is stated that when mitral regurgitation coexists with the stenosis, valvotomy may increase the regurgitation, thereby converting the back-flow into a condition which is more dangerous to the patient than the original stenosis. Careful pre-operative estimation with cardiac catheterization and accurate interpretation of the pressures in the different chambers of the heart should exclude this associated lesion. I will not describe the operation in detail, but I would like to mention that most surgeons agree that the mitral valve should be approached through the left auricular appendage. It is evident that if it is possible to gain entrance to the left ventricle from the auricular appendage and through the mitral valve, it is also a feasible proposition to approach the aortic valve from this direction. Several attempts have been made already to dilate the stenosed aortic valve by means of this trans-cardiac approach. The aortic valve can, of course, be approached via the great vessels, e.g. it is possible to enter the carotid artery, pass a special cutting instrument down its lumen, and down the aorta towards the aortic valves. Mitral stenosis is one of the most crippling diseases of humanity and surgical treatment is doing much to raise the hopes and outlook of sufferers from this dread complication of rheumatic fever.

In cases of severe mitral regurgitation, the incompetence of the valve can be reduced by the insertion of a graft of pericardium through the heart wall. This new operation has not been frequently performed, but the results so far are hopeful. Operations are also being devised to improve the coronary circulation. A variety of techniques have been employed, one of which was an attempt to stimulate the formation of adhesions between the heart and the pericardium by the use of irritating substances. It is believed that new blood vessels grow between the pericardium and the heart, thereby enriching its blood supply. It has also been possible to improve the blood supply of the heart muscle by grafting flaps from nearby structures, such as omentum, intercostal muscle and pectoralis major muscle. These grafts are made onto the surface of the heart in the hope that new blood vessels will grow into the poorly nourished area. Finally, direct anastomosis between systemic blood vessels and the myocardium or the coronary sinus have been attempted. These operations are still 'on trial', although cardio-omentopexy operations were initiated over 15 years ago.

Surgical measures also provide a considerable degree of relief for sufferers from constrictive pericarditis. Apparently most cases of chronic constrictive pericarditis are secondary to tuberculous involvement of the pericardium. The sac in time becomes fibrosed and eventually undergoes changes due to calcification. The enclosed heart is unable to fill properly during diastole and, in consequence, due to the reduction in cardiac output, the patient's capacity for exercise is much impaired. The operation of pericardiectomy provides relief by the removal of the calcified and restricting pericardium. It is still a matter of controversy whether the left or the right side of the heart should be the first to be decompressed. Some authorities consider that enough has been achieved if the left ventricle has free range of movement. Others state that it is more important to relieve the constriction around the great veins so that a steady flow of blood proceeds into the right side of the heart. My own impression is that, if possible, both of these sites should be dealt with simultaneously. It must be remembered, however, that plaques of calcified tissue extend down and into the pericardium and the calcified areas may extend right in towards the heart chambers. The calcified lining should be removed, but it is not necessary to interfere with the calcified plaques within the muscular substance.

Recently workers have described an artificial heart by means of which the patient's circulation can be maintained while intra- or extra-cardiac operations are being performed. Though this work is still proceeding, the complicated apparatus has precluded its clinical application.

Relief of 'Cardiac' Pain

A great deal of attention has been directed towards the heart because of the urgent symptom of pain. A variety of drugs has been used successfully to relieve cardiac pain and perhaps too little thought has been given to the causation of this pain. Lewis, in his early work, suggested that cardiac pain may be due to ischaemia, a term open to much abuse and faulty application. The heart is probably the most unlikely part of the body to suffer from ischaemia. Several facts about cardiac pain are deserving of interest. It has been noticed, for instance, that definite electrocardiographic changes occur during the attack of pain in angina pectoris; that patients displaying attacks of pain indistinguishable from angina pectoris and with the concomitant electrocardiographic changes have been found to be suffering from either a spontaneous pneumothorax, a diaphragmatic hernia or an infection of the biliary system. The interesting fact in these cases is that the pleural cavity, the diaphragm and the capsular area around the liver are all supplied by the phrenic nerves. As the typical anginal pain has been relieved by the requisite treatment of these conditions, the conclusion has been reached that the anginal pain could never have been cardiac in origin.

Another important point is that the pain which radiates up from the retro-sternal area into the neck and face and sometimes down into the arms, runs a course which closely follows that of the distribution of nerve segments related to the phrenic nerves.

Many surgical procedures have been carried out for the relief of this pain, e.g. the sympathetic nerve supply to the heart has been divided, the vagal branches to the heart have been divided and a host of combinations of nerve operations have been used, with equivocal results. If we assume that the afferent nerve supply from the heart has not been ascertained correctly, then we can also assume that the wrong nerves have been operated upon in the past. One of the striking features is the proximity of both phrenic nerves to the heart. When 3 dissimilar con-

ditions can produce so-called 'cardiac' pain, it is not unreasonable to suggest that perhaps cardiac pain may be transmitted through the phrenic nerves. The pericardium has a fibrous capsule which would not readily tolerate a sudden increase in its contents. It would not be unreasonable to believe that a sudden increase in the size of the heart, leading to a sudden distension and stretching of its capsule, might well stimulate the phrenic nerves with the consequent occurrence of pain in their distribution. Phrenic nerve irritation would conceivably not occur in cases of old-standing cardiac disease with great enlargement of the heart and pericardium.

SUMMARY

A survey is given of the recent advances in cardiovascular surgery.

An attempt is made to amplify the existing classification of cardiac lesions.

Brief descriptions of the various operative procedures have been inserted.

The surgical therapy of mitral stenosis is stressed in view of the world-wide incidence of this disease.

The suggestion that the phrenic nerve is the pathway of cardiac pain is brought forward as a tentative and original line of thought.

OOR DIE CHIRURGIE VAN DIE HART EN GROOT ARE

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Kaapstad

Dit is nog nie solank gelede nie dat elke hartwond as dodelik beskou was. Fischer het in 1867 nie minder as 452 gevalle van hartwonde gesamel nie, wat almal genees het; maar selfs die bewysstuk kon die beroemde chirurg Billroth nie daarvan weerhou om op 'n Chirurgiese Kongres in 1881 te sê: ,'n Geneesheer wat aan die hart wil opereer is onverantwoordelik'. Alhoewel Bloch aljuis in 1882 uitstekende resultate in hartsnykunde by diere gehad het, was dit eers in 1896 dat Farina gewaag het 'n hartnaat by 'n mens te maak. Die pasiënt het egter gesterf. Eers Rehn het kort daarna met sukses 'n naat by 'n pasiënt uitgevoer—dit was 'n geval van 'n bloeiende wond in die spiere van die regter hartkamer. In die volgende tien jaar hierna het hy 124 gevalle van hartwonde met nate voorsien, waarvan 50.4% herstel het.

Met die werk van Rehn is die fondament van die hartchirurgie gelê. Die moontlikhede van chirurgiese werk was egter nog beperk tot die aard wat gedaan kon word sonder om die vrye borsholte te open. Dit was eers met behulp van die moderne narkose metodes wat deur Crafoord ingestel was, dat 'n mens sonder enige gevaar in die borsholte kon werk en sodoende ook die hart beter kon hanteer. Nieteenstaande die feit was daar tog oneindig veel op die gebied van hart-chirurgie kort na die jaar 1900 gedoen.

Afgesien van die versorging van hartwonde moet 'n mens dink aan die verwydering van vreemde voorwerpe, soos koeëls, ens., uit die hartspiere of hartvlies, asook die verwydering van die verkalkte hartvlies in die geval van pericarditis constrictiva, verwydering van die embolie uit die arteria pulmonalis, soos deur Trendelenburg in 1906 gedoen. Sauerbruch het met sy drukverskillendheidsnarkose die vrye borskas kon open en was daardeur in staat om beter toegang tot die hart en sy omliggende organe te kry. Hy het dan ook alle tot hiertoe bekende chiurgiese metodes van die hart baie kon verbeter en het operatiewe werk kon doen wat tot dusver onmoontlik was. So het hy byvoorbeeld in 1910 alreeds 'n aneurisma van die regter voorkamer met sukses kon opereer.

Die moderne hart-chirurgie kan in drie hoofgroepe saamgevat word, d.i. die chirurgie van:

(a) Traumatiese;
(b) Aangebore; en
(c) Verwerfde hartkwale.

DIE CHIRURGIE VAN TRAUMATIESE HARTSIEKTES

Hartwonde veroorsaak deur deurdringende instrumente is gewoonlik die oorsaak van hierdie toestand. Sterk bloedende wonde is gewoonlik na 'n kort tydjie dodelik. Wonde met geringe bloeding kan deur snelle handeling gered word. Die kanse van herstelling sonder operasie is by selfs die wonde gering. Rehn het in 1895 die syfer as 10% aangegee en dit was deur Bigger in 1939 na sy ondervinding, as dieselfde betrag. Een van die mees gevreesde resultate van 'n bloedende hartwond is die ,hart-tamponade', waar die pericard met bloed vul en die bewegings van die hart inkort. Soms veroorsaak geringe bloedings byna geen simptome nie en 'n mens kan in X-straal portrette net 'n stukkie metaal in die hartskaduwee sien, wat aanduiding is van 'n bestaande hartwond. Dit is altyd raadsaam om, as dit duidelik is dat 'n bloedende hartwond bestaan, te opereer en die wond te versorg.

Met ernstige gevalle van ,hart-tamponade' is dit raadsaam om vooraf eers te punkteer en also die druk binne die pericard tydelik te verlig. Rehn gee by 140 gevalle 'n sterflikheid van 60% aan; Hess by 219 gevalle 69%; en Simons by steekwonde 50% en by skietwonde 61%. Hy maak ook 'n verskil tussen wonde van die linkerkamer waar dit 43% is en by die regterkamer waar dit 56% is. Sekondêre infeksie was grotendeels die oorsaak van die hoë sterflikheid. Tuffier (1920) gee 'n sterflikheid van 50% en Bigger (1939) ook 'n sterflikheid van 50% aan.

Dit was egter nog in die tyd waar die anti-biotika onbekend was en waar die moderne diagnostiese metodes sowel as narkose- en operatiewetegniek nog nie bereik was nie. Vreemde voorwerpe kan binne die hartvlies wees, in die hartspiere of vry in die hartholtes. Alhoewel die

meeste vreemde voorwerpe wat in die vrye holte van die hart voorkom, deur die hartspier na binne gekom het, kan dit wel ook gebeur deur emboliese versleping. Spech (1925) berig van 'n geval van 'n granaatsplinter in die linkerkamer na 'n verwonding in die gebied van die vena femoralis. Dit is seker nog die onmagtigheid die hart-chirurgie teenoor, wat Trendelenburg in 1906 laat sê het: „Selde waar die vreemde voorwerp hom mag bevind, in die holtes van die hart of in die hartspiere, vroeër of later sal hy ingroei sonder enige moeilikheid te veroorsaak". Dit mag wel die geval wees. Sauerbruch berig ook van twee gevalle met granaatsplinters in die hartholtes sonder enige simptome, maar dit moet nie vergeet word, soos Harken (1946) aangedui het, dat enige voorwerp wat tot die hart deurdring, gewone dele van klere en infeksieuse materiaal saamsleep. Harken stel die gevaar sydens 'n vreemde voorwerp as volg:

1. Embolie,
2. Bacteriale endocarditis,
3. Herhaalde pericardiale effusie,
4. Myocardiale breuke, en
5. Hart-neurose.

Die moderne opvatting in hart-chirurgie is dat 'n ou bestaande voorwerp binne die hartholte of muur na sy meriete beoordeel moet word. 'n Vars wond word natuurlik behandel en die vreemde voorwerp terselfdertyd verwyder.

Die snit wat gemaak word en die aard van operasie wat onderneem word, is verskillend na mate die lokalisasie van die vreemde voorwerp en daarom is dit belangrik dat deur X-straal ondersoek baie noukeurig moet vasgestel word juis waar die voorwerp sit. Harken het gedurende die Tweede Wêreldoorlog 13 gevalle geopereer waar hy 'n vreemde voorwerp uit die hartholtes verwyder het, sonder 'n enkele sterfgeval.

AANGEBORE HARTKWALE

Op die oomblik is daar drie tipes van aangebore anomalië wat vir die hart-chirurgie van belang is:

i. Oop ductus arteriosus (Fig. 1);
ii. Isthmus stenosis van die aorta (*co-arctation of the aorta*); en
iii. Die syanotiese aangebore hartkwale.

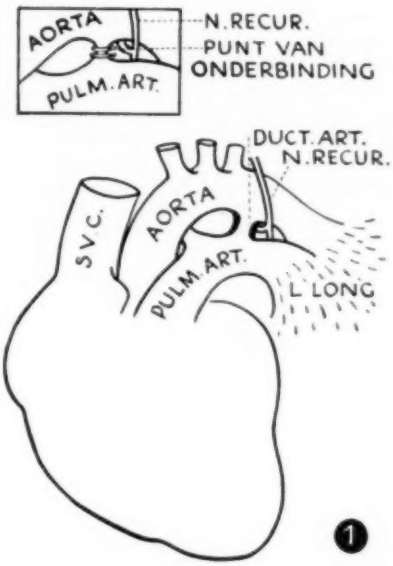
OOP DUCTUS ARTERIOSUS

Die toestand wat normaal is voor geboorte van die kind mag voortbestaan na geboorte en as die verbinding tussen die aorta en arteria pulmonalis oop is, dan veroorsaak dit 'n toestroming van bloed van die aorta na die arteria pulmonalis. Die gevolg is 'n verhoogde sirkulêre druk met al sy nadele. Dit kan ook lei tot ontsteeklike prosesse van endocarditis en endarteritis. Ook kan die verhoogde sirkulasie in die longe lei tot verswakking van die organe. Die gevalle, as dit nie behandel word nie, kan wel 'n middel leeftyd bereik, maar sterf mees voordat hulle die ouderdom van 25 bereik.

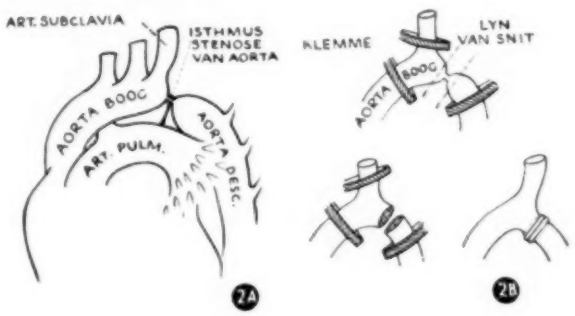
Dit is 'n aljuiste gevolgtrekking dat die euwel herstel kan word deur die ductus arteriosus af te bind. Dit was die eerste met sukses gedoen deur Gross in 1939. Sedertdien is groot getalle die hele wêreld oor gedoen. Operatiewetegniek verskil en kan in 2 hoofgroepe ingedeel word:

(a) Om die aar af te bind; en
(b) Om die aar deur te sny en met naat te voorsien.

Die resultate is uitstekend. Tubbs het getoon dat die mikro-organismus kultuur van die bloedsirkulasie binne 'n paar uur nadat die oop ductus arteriosus afgebind is, ver-



minder. Die operasie is waarskynlik die eenvoudigste van alle hartoperasies en die sterflikheid gaan nie die van enige ander groot operasie te bowe nie.



ISTHMUS STENOSIS VAN DIE AORTA (FIG. 2A)

By die malformasie is daar 'n verenging van die aorta op die plek waar die ligamentum arteriosum hom ontmoet (in sommige gevalle kan die ductus arteriosus nog oop wees). Die gevolg is dat die liggaamsdele kaudal van die verenging nie genoeg bloed kry nie en die dele daarbo 'n verhoogde bloeddruk met al sy komplikasies het, asook verhoogde aanstrenging van die linker hart-helfte en are, met die gevaar van hartverswakking en ruptuur van die are. Om die ewewig te probeer herstel, is die kolaterale sirkulasie sterk uitgebrei sodat mens by 'n gebukte posisie van die pasiënt die dik are op die rug mediaal van die skapula kan sien. Die femorale pols is meesal nie voelbaar nie en die pasiënt kla oor pyne in die bene met aanstrenging.

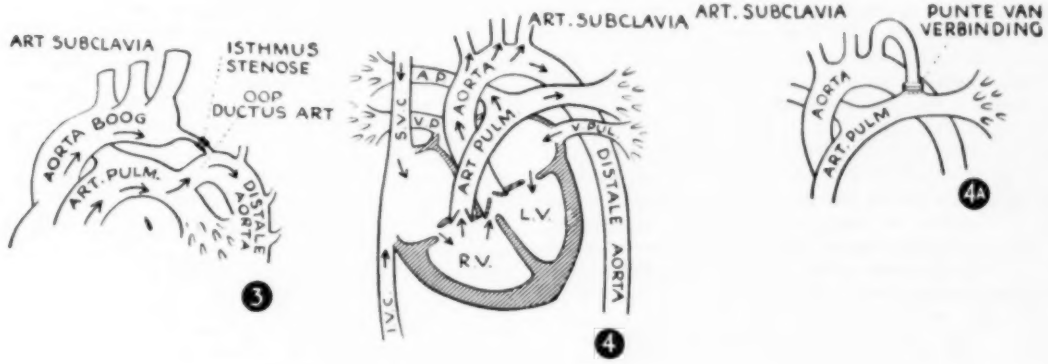
Crafoord het in 1944 die verengde deel uitgesny en die

aorta weer end tot end verenig (Fig. 2B), met goeie resultate. Dit is nou 'n standaard-operasie by die volwasse tipe van isthmus stenosis van die aorta. Die mortaliteit by die operasie bly nog altyd 10%, maar die resultate by die ander 90 persent is gewoonlik goed. 'n Ander aard van isthmus stenosis is the ‚infantile aard' (Fig. 3). Hier is die oop ductus arteriosus nie alleenlik teenwoordig nie, maar so uitgebrei dat daar 'n stroom is vanaf die arteria pulmonalis na die onderste gedeelte van die aorta. Dit is omgekeerd van die gewone verloop van die bloed by 'n oop ductus arteriosus en die onderste gedeelte van die liggaam is dan gewoonlik gedeeltelik met veneouse bloed versorg. Tegnies is hier net 'n verbinding van die arteria subclavia met die distale gedeelte van die aorta moontlik en die afbinding van die oop ductus arteriosus, soos deur Gross aangegee. In die geval waar dit nie moontlik is nie om rede 'n aneurismale rekking van die aorta, kan 'n oorplanting van 'n stuk homogene aar gedoen word. Daar is heelwat eksperimentele werk van hierdie aard met goeie resultate aan honde gedoen deur Gross, maar nog net twee gevalle aan mense.

hulle maats van veel jonger ouderdom kan doen nie en veroorsaak groot bekommernis vir hulle ouers. Helen Taussig het voorgestel dat die toestand van die kinders verbeter word daardeur dat meer van die bloed van die sistemiese arteriale takke wat te min suurstof bevat deur die longe gestuur word—dit meen deur die arteria pulmonalis. Die operasie is in 1944 deur Blalock uitgevoer. Sedertdien is die ‚Blalock Operasie' d.i. 'n verbinding van die arteria subclavia met die arteria pulmonalis (Fig. 4A), deur verskillende thorax—chirurgie die hele wêreld oor met sukses uitgevoer. 'n Gesamentlike getal van 1,050 gevalle wat gepubliseer is die hele wêreld oor, gee 'n mortaliteit van 12%.

Potts het die tegniek insoverre verander dat hy die aorta en die arteria pulmonalis sy aan sy verenig met dieselfde doel.

Brock het by die gevalle wat 'n predominerende stenose van die arteria pulmonalis het, 'n valvulotomie gedoen deur 'n spesiale mes te gebruik en deur die spiere van die regtekamer in te gaan. Die operasie by die gevalle het 'n baie hoër mortaliteit in vergelyking met gevalle van suiwer



SYANOTIESE KWALE

Onder hierdie hoof word 'n aantal abnormaliteite tesame geneem wat as hoof eienskap het dat daar 'n verminderde suurstof-gehalte van die arteriale bloedstroom bestaan. Die onbevredigde suurstof-settiging van die bloed word veroorsaak deur 'n verskuiwing waar die bloed van die regter deel van die hart direk na die sistemiese arteriale takke (links) vloei sonder dat dit deur die longe gaan. Die noemenswaardigste van hierdie groep is die ‚tetralogie van Fallot' (Fig. 4) wat in 1858 deur Peacock beskrywe is. Hier bestaan terselfdertyd:

1. 'n Inter-ventriculâre muur defekt in die pars membranacea septi.
2. Stenosis of artresia van die arteria pulmonalis.
3. 'n Regs verskuiwing van die aorta, wat sy oorsprong het vanaf oor die muur defekt of vanuit die regterkamer.
4. Vergroting van die regterkamer.

Kinders wat hierdie anomaliteit opwys het 'n blou kleur wat intensiewer word by aanstrenging. Hulle word maklik kort van asem, hulle kan net kort distansies loop en moet dan rus deur te ‚hurk'. Hulle kan geensins doen wat pulmonale stenose. Waar daar 'n infundibulâre stenose voor die pulmonale klappe bestaan, het Brock deur die muur van die regtekamer gegaan en met 'n spesiale geus die verdikte spierdele afgeknip. Ook hier is die mortaliteit hoog.

DIE VERWERFDE HARTKWAAL

Alhoewel operasies by verwerfde hartkwale, soos byvoorbeeld die afskilling van die pericard by pericarditis constrictiva, aljuis in 1910 deur Delorme probeer is en deur Hallopeau kort daarna met sukses gedoen is, en die tegniek deur Rehn en Sauerbruch verbeter is, is dit eers in die laaste paar jaar dat die groot groep van verwerfde hartkwale, d.i. die reumatiese hartkwale, operatief aangepak was. Cutler en Levin het in 1925 met sukses 'n geval van mitraal stenose geopereer met 'n valvulotom deur die linkerkamer te gaan en die verengde hartklep te deursny. Soutar het in 1925 ook 'n suksesvolle geval geopereer waar hy, sonder om in die hart in te gaan, met die finger deur die muur van die regter voorkamer in te druk teen die verengde mitraal klep, en also die klep gerek

het. Dit was Brock in 1949 wat vooraangegaan het met ag gevalle waarvan ses suksesvol was. Hy het deur die linker hartoor gegaan en dan die opening van die mitraalklep met sy finger gerek. Mits die klep verkalk was, het hy 'n spesiale mes wat op die finger gly, gebruik. Terselfdertyd het ook Harken, Bailey, Sweet, en andere, ook verskillende pogings aangewend om die verenging van die mitraalklep te verwyder. Hulle het egter deur die kamer self ingegaan en resultate was nie so goed nie. Later het hulle ook 'n metode ontwikkel wat min of meer met die van Brock ooreenstem.

Tesamevattend is daar al 270 gevalle van operasies by mitraal stenose gepubliseer. Die mortaliteit is 14.5% maar die suksesvolle resultate is uitstekend vir die andersins helemaal verlorene pasiënt.

Met die verwending van homogene aarstukke vir oorplanting het nou 'n nuwe moontlikheid in die hartchirurgie ontstaan om gevalle wat voorheen nie moontlik was om te opereer nie, soos byvoorbeeld die infantile tipe van isthmus stenose, nou te kan doen, asook om aneurisma van die aorta of ander groot are nou deur oorplanting van ander aarstukke in hul plek te verwyder. In die verband het Scott baie eksperimentele werk gedoen.

Bailey het in die jongste tyd verskillende gevalle van aorta-klep stenose probeer opereer en het met een geval sukses gehad. Hy het ook 'n paar gevalle van lekkleppe met 'n stuk van die pericard, wat deur die hartmuur ingeplant word, probeer verbeter. Hier het hy ook relatiewe sukses gehad. Hierdie operasies is egter nog in die eksperimentele stadium.

Nieteenstaande dat Beck vir die laaste 25 jaar onophoudelik op die gebied van angina pectoris en haartaar thrombose gewerk het en dat daar verskillende uitvoerbare operatiewe metodes tot verligting van die kwaal bestaan, is tog nog die werklike resultate in hul doeltreffendheid nie so suksesvol as die ander standaard hartoperasies nie.

My resultate is in Tafel I saamgevat:

TAFEL I

Operasie	*Getal van Gevalle*	*Ouderdom*	*Genesing*	*Verbetering*	*Status Idem*	*Exitus*
‚Blalock' ..	3	5½–14	–	3	–	–
Valvotomie:						
Vir mitraal stenose ..	7	22–34	–	6	1	–
Vir pulmonaal stenose ..	1	8	–	–	–	1
Isthmus stenose van aorta ..	3	5½–28	2	–	1	–
Oop ductus arteriosus ..	2	3½–10	2	–	–	–
Pericarditis constrictiva ..	3	37	3	–	–	–
Angina pectoris	4	38–43	–	3	1	–
Vreemde voorwerpe in hart	1	41	1	–	–	–

Die aard van die anomalie in al drie die gevalle van isthmus stenose wyk sterk af van dit wat 'n mens gewoonlik voor vind en word daarom met meer besonderheid bespreek.

E. A., 12 jaar. Gesien 23 Julie 1952. Sedert 4 jaar krampe in die bene na aanstrenging. Die pyne en krampe het tot so 'n mate toegeneem dat hy nie meer in enige sport kan deelneem nie. Tydsgewyse ly hy aan geweldige hoofpyn en gevolglik aan senuweeagtigheid en slegte humeur—die toestand word stadigaan slegter. Bloeddruk aan die arms gemeet is 170/60 mm. Hg regs en 165/60 mm. Hg links. Aan die bene is die bloeddruk nie meetbaar nie. Die femoraal pols is ook nie voelbaar nie. By gebukte stelling is die sterk polseerende are mediaal van die scapula op die rug merkbaar. Die kleur is normaal en geen verskil tussen kleur van die arms en die van die bene bestaan nie.

'n X-straal portret toon aar-drukmerke aan die ribbes en 'n onontwikkelde boog van die aorta. 'n Angiocardiogram wat op 25 Julie 1951 gedoen is (drs. Schulze en Nellen) toon 'n duidelike verenging van die aorta distaal van die plek waar die arteria subclavia die aorta verlaat.

Op 14 Oktober 1951 is 'n operasie voorgeneem met die doel om die isthmus stenose te verwyder. Dit is in 'n algemene intubasie narkose met gas, suurstof en curare gedoen. Die narkotiseur was dr. van Hoogstraten. Die snit was deur die vyfde interkostale ruimte en in die posterio-laterale posisie. Die vorm van die aorta soos gevind is in Fig. 5 gedemonstreer. Opvallend was die buitengewone groot stenose en die geweldige gerekte aorta distaal van die stenose, asook die puntvormige formasie van die gerekte aar. 'n Verwydering van die wye aorta gedeelte tesame met die stenose was nie moontlik nie omdat dan tenminste 'n 8 cm. lange stuk moes verwyder word en die stompe dan nie meer tesame kon gebring word nie. Dit was ook te riskant om die arteria subclavia in die sakvormige aar te plant. Dit was toe besluit om die stenose te verwyder en 'n end tot end verbinding te maak, nieteenstaande die buitengewone distale deel. Die agterste naat was voortlopend, maar die voorste naat was met enkel matrassteke. Met die loslaat van die klemme het dit op een puntjie ietsie gebloei en moes nog 'n steek gemaak word. Alles het sonder enige komplikasie verloop. Onmiddellik nadat die klemme van die aorta weggeneem was, het die narkotiseur berig dat die bloeddruk, soos aan die linkerarm gemeet, geval het tot 130/70 mm. Hg. Aljuis op die operasietafel was die femoraal pols sterk voelbaar en die volgende dag was die bloeddruk aan die bene geneem—125/56 mm. Hg.

Die na-behandeling was sonder enige tussengeval. Die agste dag het die pasiënt opgestaan en die 20ste dag is hy uit die hospitaal ontslaan.

S. C., 28 jaar. Gesien 3 November 1951. Geskiedenis was dat die pasiënt van kinds af ly aan asemnood en met die geringste aanstrenging heeltemaal afgemat was. Sy het gedurig moeilikheid met long infeksies, soos bronchitis, ens., te doen gehad. Vyf jaar vantevore is 'n operasie aan haar voorgeneem met die doel 'n oop ductus arteriosus te sluit, maar voordat die toestand van die groot are heeltemal kon vasgestel word, moes die operasie weens 'n sterk bloeding onderbreek word.

Met rus was daar geen tekens dat sy kort-asem was nie, maar met oefening wel. Die kleur was normaal en geen verskil tussen die van die bene en arms te bespeur nie. Die femoraal pols was duidelik voelbaar en geen verskil is in die bloeddruk van arms en bene te bespeur nie. Oor die hele precordium asook in die arms en agter die rug was 'n aanhoudende suisende geruis hoorbaar. Daar was geen trilling voelbaar nie. Die hart was kolossaal groot.

'n Angiocardiogram gemaak deur drs. Goetz en Nellen toon duidelik 'n prominente ductus arteriosus wat in 'n wye aorta mond, maar ook 'n leegte net onder die aorta knop. Op 21 November 1951 is die operasie voorgeneem. Daar was 'n buitengewone sterk vergroeiing in die borsholte en dit was met die grootste moeite dat die aorta en die omgewende are kon isoleer word. Die bevinding was verrassend (Fig. 6). Daar was wel 'n dik oop ductus arteriosus teenwoordig wat in 'n aneurisma van die aorta, wat so groot was soos 'n

tennisbal, mond. Die aneurisma was onmiddellik distaal van 'n duimlange isthmus stenose van die aorta geleë. Dit was also 'n infantile tiepe van isthmus stenose van die aorta met 'n vergrote post-stenotiese aneurisma. Daar was geen oorontwikkelde kolaterale sirkulasie nie. Die oop ductus arteriosus voorsien also die onderste gedeelte van die liggaam met die meeste van sy bloed. By die aard van anomalie is die verskil van kleur tussen die onderste en boonste deel van die liggaam opvallend, wat hier nie die geval was nie, daarom moet aangeneem word dat nog 'n bykomende abnormaliteit bestaan het, soos byvoorbeeld 'n inter-auriculâre septum defekt.

Die afbinding van die oop ductus arteriosus sou hier fataal gewees het, sonder terselfdertyd die isthmus stenose te verwyder. Dit was hier nie moontlik nie om rede die besonders lange stenose en dan die daartoekomende aneurisma wat ook terselfdertyd moes verwyder word. Dit sou tenminste 'n afstand van 20 cm. gewees het. Die arteria subclavia is ook te kort om die afstand te oorbrug. Die oorplanting van 'n ander aar kon waarskynlik oorweeg geword het as 'n mens voorheen daarmee gereken het, maar ook dit sou by so 'n lang afstand van 20 cm. baie twyfelagtige resultate gehad het. Die wond was gesluit en genesing was sonder enige komplikasies.

A. B., 5½ jaar. Gesien 19 Junie 1952. Sy hoof klagte was dat hy die laaste twee jaar aan ‚asthma' ly. Tussen sogenaamde aanvalle het hy 'n droë hoesie. Hy kon ook nie veel loop of speel nie dan word sy bene moeg en swaar.

By ondersoek het hy die tiepiese verskynsels gehad van isthmus stenose van die aorta. Daar was hoegenaamd geen femoraal pols te voel nie. Die bloeddruk in die arms was regs 166/90 mm. Hg en links 160/90 mm. Hg. Die angiocardiogram gemaak deur drs. Goetz en Nellen, toon 'n onderbreking van die aorta distaal van die arteria subclavia.

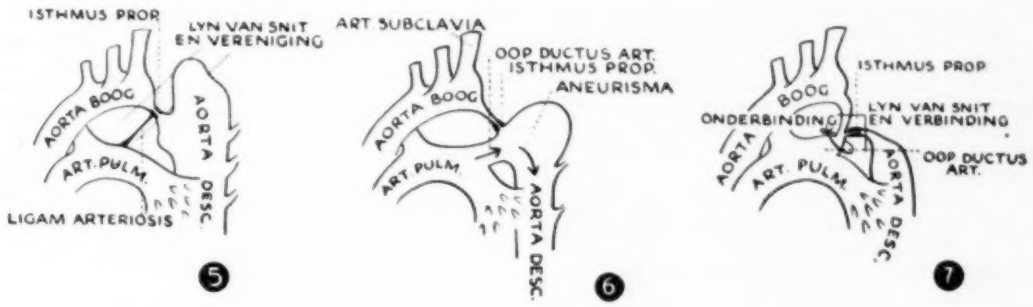
Die pasiënt was op 28 Julie 1952 opereer. Opvallend by die bevinding was (Fig. 7) 'n oop ductus arteriosus wat met 'n lang gestrekte verenging van die aorta verenig maar proximaal van die werklike isthmus prop, sodat daar 'n verbinding van die proximale aorta-deel met die arteria pulmonalis is, en aldus 'n stroom van links na regs wat die longkomplikasies in die geskiedenis verklaar.

Dit was moontlik hier om die oop ductus arteriosus af te bind en die isthmus prop te verwyder. Die verbinding is gemaak met enkel matrasnate wat mettertyd, nou dat die isthmus stenose verwyder is, die noue deel van die aorta die moontlikheid sal gee om te rek.

Die week na die operasie was die bloeddruk in die arms gemeet 138/90 mm. Hg en in die been gemeet 130/110 mm. Hg. Die femorale pols was voelbaar. Die genesing was sonder komplikasies en die pasiënt is na drie weke uit die hospitaal ontslaan.

Daar is melding gemaak van 24 van my eie gevalle, waarvan 3 gevalle van isthmus stenose van die aorta, wat aldrie afwyk van die gewone aard van die anomalie, kortliks beskrywe is.

Die beskrywing is deur middel van die sketse verduidelik.



SAMEVATTING

Kortliks is hier die ontwikkeling en teenwoordige stand van die chirurgie van die hart in die groot are gegee.

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RECENT EXPERIENCES IN THE TREATMENT OF AMOEBIASIS

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If I may be permitted to argue from a teleological standpoint it might be expected that the most successfully adapted amoeba would live in the lumen of the bowel, avoid damage to its host, and ensure that it passed the anal sphincter only in the encysted form. In practice, it is easily observable that patients who have few and mild, or maybe, no symptoms, usually pass cysts. Host and amoeba are well adapted to each other. In ulcerative dysentery, however, trophozoites are passed and cysts are rarely if ever seen. Adaptation has broken down and the amoeba starts on a progress of suicide.

Some people, of whom I am one, believe that *Entamoeba histolytica* is capable of existing in the lumen of the bowel (or indeed in the cavity of a crypt or mucous gland, which is still the lumen of the bowel) without causing any break in mucosal continuity. Such free-living amoebae cause no symptoms and pass as cysts in the excreta. A systemic amoebicide such as injected emetine, unless excreted into the bowel lumen, would hardly be expected to destroy them. In such cases a locally acting drug given by mouth would be more likely to succeed. Under circumstances we do not understand the amoeba, to its own detriment, may become invasive and the symptomless carrier then becomes either a mild sufferer from 'amoebiasis', if the lesions are minute, or a sufferer from amoebic dysentery if macroscopic ulcers form. In these cases amoebae have entered the tissues of the bowel wall—and indeed in severe cases often the liver as well—and systemic drugs are needed. Amoebae may therefore be found in 3 situations: in the bowel lumen; in the bowel wall; or in the tissues elsewhere. In treating amoebiasis, drugs must be chosen so that they exert their action in the right place. At present there are only 2 well-known and well-tried systemic amoebicides, emetine and chloroquine. On the other hand, drugs used locally in the bowel against amoebiasis are many in number and may be divided into directly amoebicidal agents and antibiotic agents. Amoebicides include the arsenicals carbarsone, stovarsol, and milibis; the iodinated compounds such as diodoquin, vioform and yatren; and the emetine derivative emetine bismuth iodide. Antibiotics include penicillin, the sulfa drugs, aureomycin, terramycin, neomycin and bacitracin. The new antibiotic, fumagillin, comes into a special class for it destroys no bacteria but only *E. histolytica* and certain other protozoa.

There has been in the past, and indeed there still is, much difference of opinion about the efficacy of these various agents used against the amoeba. We, in Natal therefore decided 6 years ago that we would attempt to formulate our own appraisal of the comparative value of the various drugs. We were fortunate in having a vast mass of African amoebic dysentery at our disposal from which we have been able to select a large number of cases of nearly uniform severity. All patients submitted to therapeutic trials have invariably suffered from acute amoebic dysentery. All had visible ulcers in the colon and all were passing trophozoites. As a rule we took the round number of 50 as suitable for each series and for statistical comparison. Evaluation of the results was by sigmoidoscopy and by examining mucus taken from ulcers or purged stools. Observations were often made daily until all ulcers were healed and final assessment and comparison was made at 20 days. On this day we assessed our cases without ulcers or amoeba as successes; ulcers without amoebae as probable failures; symptomless cyst passers; ulcers without amoebae as absolute failures. We have done our best with follow-up studies, but they are scientifically very inadequate. I must emphasize that in each series only one drug has been used.

I want first to give you a brief picture of our results with amoebicidal agents (Table 1). You will see from the figures that the common agents we have used, emetine, E.B.I., yatren and diodoquin, are all of nearly equal efficacy. Statistical analysis shows no material difference between them. We must also note their very unsatisfactory achievement, for each of them leaves a residue of about 25% unhealed and still harbouring amoebae at the end of treatment. More unsatisfactory still are the figures for carbarsone and milibis. Chloroquin, given alone, is noteworthy as a very poor intestinal amoebicide; but it is a very good hepatic amoebicide owing to the peculiar power of concentrating this drug enjoyed by the liver.

TABLE 1: ASSESSMENT AT 20 DAYS FROM START OF TREATMENT

	No. of Cases	*Results %*				
		Success	*Probable Failure*	*Symptomless Cyst Passer*	*Absolute Failure*	*Total Parasitic Failure*
Emetine grains xv	50	50	22	0	28	28
E.B.I. grains xxx crushed	54	55·6	24·1	0	20·4	20·4
Yatren	51	68·6	5·9	0	25·5	25·5
Diodoquin	50	58	18	0	24	24
Carbarsone	50	46	8	0	46	46
Milibis	21	23·8	14·3	0	61·9	61·9
Chloroquin	10	10	40	0	50	50

E.B.I. needs a few special remarks. We were shocked by the results achieved by using the ordinary tablets (Table 2). These were far worse than in a subsequent trial when the same tablets were crushed. These latter gave results nearly the same as with emetine, diodoquin or yatren as previously described. Some time after these trials we had occasion to test a new enteric-coated E.B.I. preparation made by Burroughs Wellcome which as you will see from the table far surpasses any other amoebicide. Of the 13% parasitic failures, only 2% had unhealed

ulcers, 10% having been converted into symptomless cyst passers. It is clear from this that the efficacy of E.B.I. is high, but is greatly dependent on its dispersability and ease of absorption. It is, in fact, essential to choose a reliable brand—and many brands are most unreliable. In spite of its efficacy, we do not use E.B.I. very much owing to its toxicity. Diarrhoea, vomiting and depression are quite frequent side-effects and make it very unpopular. Both yatren and E.B.I. are drugs which produce much diarrhoea and are therefore undesirable for patients who already suffer from this symptom. None the less, it is clearly very effective, and should be considered in special cases.

TABLE 2: ASSESSMENT AT 20 DAYS FROM START OF TREATMENT

	No. of Cases	Results %				
		Success	Probable Failure	Symptomless Cyst Passer	Absolute Failure	Total Parasitic Failure
E.B.I. whole	68	39·7	13·2	0	47	47
E.B.I. crushed	54	55·6	24·1	0	20·4	20·4
E.B.I. Enteric Coated (B.W.)	46	83	2	11	2	13

Table 3, I think, illustrates the truth of the general belief that polypharmacy is a good principle in the treatment of amoebiasis. You will see that when emetine and diodoquin are used together the number of absolute failures falls from 28% and 24% for each respective drug to 2% when they are combined. I think this graphically indicates a true synergism between the two drugs.

TABLE 3: ASSESSMENT AT 20 DAYS FROM START OF TREATMENT

	No. of Cases	Results %				
		Success	Probable Failure	Symptomless Cyst Passer	Absolute Failure	Total Parasitic Failure
Emetine	50	50	22	0	28	28
Diodoquin	50	58	18	0	24	24
Emetine + Diodoquin	60	75	23	0	2	2

Turning to the antibiotics, we applied the same system of evaluation and, of course, all patients were treated only with the test antibiotic and without added amoebicides. Table 4 shows that aureomycin, terramycin, and penicillin and sulfasuxidine together (the latter in very large doses) produce results which far outstrip those obtained with the single drugs penicillin, sulfasuxidine, streptomycin, neomycin or bacitracin. At the bottom of the Table are given the results with emetine alone and I think you will agree that aureomycin and terramycin far outstrip the amoebicides as well. At this stage perhaps one should forsake the 'bare bones' of statistics and pay tribute to the amazing rate of recovery of even the worst cases when treated with aureomycin or terramycin. The debit side is a relapse rate with aureomycin which we know to be at least 14%. I do not think this is higher than with other drugs. Most of the relapses occur within 40 days.

TABLE 4: ASSESSMENT AT 20 DAYS FROM START OF TREATMENT

	No. of Cases	Results %				
		Success	Probable Failure	Symptomless Cyst Passer	Absolute Failure	Total Parasitic Failure
Aureomycin	52	94	4	0	2	2
Terramycin	49	90	4	0	6	6
(Penicillin + (Sulfasuxidine	50	86	12	0	2	2
Penicillin	54	38	23	0	39	39
Sulfasuxidine	57	38	27	0	35	35
Chloramphenicol	16	75	0	18·5	6·5	25
Streptomycin	17	23	13	17	47	64
Neomycin	12	42	0	0	58	58
Bacitracin	12	75	0	0	25	25
Fumagillin	20	85	0	5	10	15
Emetine	50	50	22	0	28	28

Fumagillin. This is a new antibiotic which acts, strangely enough, not on any bacteria but only on amoebae and some other protozoa. We were asked to work out its value in acute dysentery and can now give a preliminary report. Our results, given in Table 4, show that in a preliminary series of 20 cases it gives a good account of itself, although it is not as good as aureomycin. Moreover, 4 of the successful cases, that is 20%, showed a parasitic relapse within 2 months.

These are the observations we have made in the last 6 years and you must realize that in what has been said so far (and in what we have published) we have attempted to record only the coldly scientific facts and we have not as yet made any serious recommendations about practical treatment. What follows are suggestions based on these findings, but not yet submitted to test.

This brings me to the practical handling of patients. Here we must return for a moment to the site of infection whether intra-luminal or mural and to the severity of the clinical condition, whether symptomless, mildly symptomatic, or active or fulminant dysentery.

It would be foolish indeed to contend that the amoebic cyst should be attacked differently from the amoebic trophozoite, for all cysts must have started as active amoebae. But it is the patient as a whole person who must be treated and not the isolated amoeba. If we accept this, then we may admit that the cyst-passer should be treated differently from the trophozoite-passing patient with dysentery. Mild symptoms on general principles do

not need drastic remedies and as I believe the symptomless carrier suffers only an intra-luminal infestation, I think diodoquin alone is a good, harmless and simple amoebicide which can be used while the patient is at work. It is almost traditional that emetine by injection is not successful in removing cysts and I would suggest that this is predictable if the parasites are not in the tissues, but only in the contents of the bowel. At any rate, emetine is neither necessary nor desirable in the treatment of symptomless cyst-passers.

In the dysenteric form of the disease a choice of treatments is available. On general principles I think that a combination of a systemic amoebicide and one or more agents which act locally in the bowel should be used. Aureomycin and terramycin are themselves highly effective, but in view of the known relapse rate should be combined with chloroquin or emetine. Aureomycin and terramycin are expensive and on this score alone may be unsuitable. On the other hand they enable a patient with a moderate dysentery to recover in 3 or 4 days and remain at or return to work. Hospital beds can therefore be saved and probably more than compensate for the expense of the drug. In severe and fulminant dysentery, antibiotics *must* be used and will be found life-saving.

For patients requiring ambulant treatment for a moderate dysentery, I would suggest aureomycin or terramycin 1 gm. and chloroquin 500 mgm. daily for 15 days with diodoquin 3 tablets *t.d.s.* for 20 days. Ten-day treatment with terramycin or aureomycin might well suffice, but we have no personal experience. When bed-rest and nursing are economically convenient or when aureomycin and terramycin are unavailable, our routine treatment is emetine and thalazol for 10 days and diodoquin for 20 days, all running concurrently. In very severe cases penicillin should be added to the thalazol. Except when emetine is used, bed-rest is necessary only when the severity of the dysentery itself demands it; otherwise such patients may be ambulant.

Many patients with amoebiasis, of course, have only mild symptoms without dysentery. If they pass trophozoites it is, I think, a sign of greater activity and invasiveness of the amoeba than if they pass cysts. These cases require more intensive treatment than the cyst-passer. These patients are mostly chronically unwell and clearly not in need of bed-rest. For them again the choice is largely an economic one. A combination of aureomycin or terramycin with diodoquin and chloroquin is ideal and may be given to ambulant patients. Diodoquin, chloroquin and thalazol together would be reasonable ambulant treatment. Alternatively, bed-rest and E.B.I., chloroquin, and diodoquin. You will notice the frequent mention of chloroquin. I think this non-toxic systemic amoebicide should be used more often as a method of preventing the production of hepatitis from amoebae already seeded in the liver. You will notice too that we have dropped the arsenicals because of their much lower efficacy.

In sum, the treatment of election for all forms of amoebiasis is aureomycin or terramycin with a systemic and local amoebicide. But this is not always necessary and certainly not so in the carrier or mildly symptomatic patient for whom other and less expensive drugs are quite adequate.

I have dealt so far with the purely technical treatment of the colitis. The patient himself remains and deserves at least a few words.

The treatment of amoebiasis should be as simple as possible and should be chosen with care to avoid the neuroses which often follow it. On general principles, one may say that oral treatment is preferable to injection beneath the skin and both are preferable to injection into the rectum. Retention enemas, suppositories and any kind of repeated rectal injection serves to focus attention on a function and part of the body which works best when left alone. I think that some at least of the post-amoebic disturbances of colonic function are due to the use of retention enemata.

Post-amoebic disturbances of colonic function such as muco-membraneous colic are not usually due to secondary infection. This is provable by finding an uninflamed mucosa at sigmoidoscopy which should over-ride even a laboratory finding of *B. asiaticus*. Antibacterial agents and vaccines do no good to these patients and their chronic or repeated exhibition only serves to establish their neuroses. Reassurance and explanation when coupled with antispasmodics and hydrophylic gels are, however, very satisfactory.

If patients are treated with emetine, they should be kept in bed for a fortnight, but they should *not* be warned that their heart will be affected if they rise from their beds to sit on a lavatory seat or wash themselves in a bath. With present staff shortages bed-patients are sometimes forced to disregard such instructions and having done so are apt to anticipate the appearance of cardiac symptoms. Cardiac neurosis following emetine therapy is a frequent occurrence.

In the treatment of amoebiasis it is of great import to remember that a patient's amoeba may have had its origin in the excreta of a food handler in the family. What appear to be relapses are quite often reinfections and it is therefore important that other members of the family and particularly food handlers, should have their stools examined.

We must also remember that a patient with gall-stone colic or a patient with a nervous dyspepsia may also quite independently pass cysts in his stools. We can guarantee removal of the amoebae, but this will not remove the symptoms. We must warn patients that if their symptoms persist after adequate treatment a cause other than the amoeba must be sought. Consideration of these factors in the handling of the patient will prevent much demoralization, much belief in the incurability of amoebiasis and much amoebophobia.

We have to-day a large variety of very powerful weapons at our disposal for the destruction of amoebae. We can treat our patients with the almost certain knowledge that they will be free of dysentery, ulcers and amoebae within 10 days of treatment.

We have made great progress; but there are still 2 broad practical problems remaining before reasonable control of amoebiasis will be achieved. The first is prophylaxis. This is a matter of the known principles of simple sanitation. It is only unsolved to-day because the authorities are too dilatory and too careless to apply the remedies which are well known to them and to all of us. The second outstanding practical problem is the prevention of relapses. No drug, as yet available, has proved completely satisfactory in this respect.

ELECTRO-NARCOSIS WITH SODIUM PENTOTHAL AND CURARE OR FLAXEDIL*

J. A. F. DENYSSEN, D.P.M., R.C.P. & S. (ENG.)
W. A. LOMBARD, M.D.
and
W. E. OWENS, M.R.C.S., L.R.C.P., D.A.
Pretoria

The term electro-narcosis was first coined in 1902 by Leduc [1] who attempted to produce anaesthesia in animals by means of a unipolar pulsating current.

Electro-narcosis is a state of unconsciousness produced by passing an electric current through a patient's brain, usually for many minutes. In electro-convulsive therapy the duration of the current does not often exceed 0.5 seconds, but a much higher current is used. The apparatus selected was one operating from the mains (250 A.C. 50 cycle). The patient's circuit is isolated from the mains by a transformer. The milliammeter records the current passing through the patient, and is pre-set at a desired strength and hardly affected by resistance in the patient's circuit.

Experience gained with curare and E.C.T.† proved helpful when curare and subsequently flaxedil was used in electro-narcosis therapy.

All treatment was carried out in the neuropsychiatric unit with the aid of an experienced anaesthetist. A clear airway ensured adequate oxygenation and made it possible to have a smooth narcosis throughout. The fact that the anaesthetist dealt with the purely anaesthetic emergencies, left the psychiatrist free to handle the E.N.T.‡ The presence of 2 medical men contributed largely to the safety of the procedure.

Most of the patients were given sub-coma as supportive treatment. Occupation and recreational therapy was available and fully utilized at the earliest possible moment. In fact some patients spontaneously dived into the swimming pool or started playing tennis about 2 hours after E.N.T. with evident benefit.

In dealing with private patients difficulties arose in assessing the value of treatment as some left prematurely, against medical advice, for economic and other reasons.

In the early cases of the series, before sufficient experience of the technique had been gained, there was refusal to continue treatment on account of the patient becoming conscious during E.N.T. With improvement of the technique, the incidence of this complication fortunately became negligible.

Confidence in the safety of the treatment lead to its use in other conditions where a favourable response could be reasonably anticipated.

In the initial stage of E.N.T., strong tonic and clonic contractions occur, but these are less severe than with E.C.T. and less current is used to produce them. The large number of cases treated all over the world showed little evidence of E.C.T. being directly responsible for organic damage to nerve tissue. Fleming, Golla and Grey Walter [2] explained that because of the vascularity, conductivity of bone is high, approaching that of saline and in C.S.F. even better. In consequence of this and dilution in tissues, the current density of the brain in man is reduced at least a hundredfold. The general concensus of opinion appears to be that changes produced, if any, are largely reversible. After the tonic contractions the narcosis is maintained with considerably less current, approximately 120 milliamps, which varies in individual patients, so that with a drop of 5 or 10 milliamps the patient becomes conscious. There is even less reason to believe that this can cause organic damage.

It is interesting to make comparison with the currents used in penal executions in America. (About 2,000 volts, 10,000 milliamps, and to ensure death the current is passed through the body to produce ventricular fibrillation.) Ventricular fibrillation can only be produced when the current passes through the heart, so that this can be ruled out in E.N.T., as the current is passed through the brain only.

The only danger in healthy subjects is respiratory paralysis, which is the commonest cause of electrical fatalities. Respiratory paralysis or respiratory arrest occurs initially with every treatment in E.N.T. The current is then reduced to a level sufficient to maintain the narcosis, respiration returns and is usually deep and regular provided that curarization has not been pushed too far. With oxygen under pressure and a suitable resuscitator available, artificial respiration has been highly successful in overcoming respiratory difficulties.

TECHNIQUE AND EQUIPMENT

Treatment is given twice a week as a rule. On the day of treatment a good breakfast is allowed but no food or beverages 3 hours before. A hypodermic injection of atropine gr. 1/50 is given 20 minutes before treatment and the bladder is emptied. A bed and mattress is used for treatment, the patient lying with his head at the foot.

Anaesthetic Apparatus. An E. and J. Resuscitator capable of forcing in oxygen under pressure and withdrawing air by negative pressure through a mask applied to the face is used. The machine gives an immediate clicking signal if there is an obstructed airway.

Oxygen cylinder with reducer valve fitted with a nasal catheter, laryngoscope and airways.

Treatment Table. Shotter-Rich Electro-narcosis machine and MacPhail-Strauss Electro-narcosis machine. Two silver electrodes 1¼ × 1¼ inches. Concentrated saline solution; electrode jelly; 8 thicknesses of lint folded to the size of an electrode; stop-watch.

An intravenous injection consisting of 0.25 mg. of thiopentone mixed with 50 to 70 mg. flaxedil is given. The electrodes are now applied with the intervening saline-soaked pad after electrode jelly has been rubbed on the

* A paper read at the South African Medical Congress, Johannesburg, September 1952.
† E.C.T. = Electroconvulsive therapy.
‡ E.N.T. = Electro-narcosis therapy.

forehead. The inner borders of the electrodes are in the mid-pupillary line and the lower borders ½ inch above the eyebrows. Two to 3 minutes later when the patient can open the jaw on request, gags ½ inch in diameter, made of lint, are inserted between the molars on either side, leaving a central gap for an airway. For further details and when curare is used refer to previous publication.[3]

The current is switched on at a pre-set level of 180 to 240 milliamps. This is maintained for 30 seconds. A tonic contraction of the muscles occurs followed by clonic contractions. After 30 seconds the current is reduced to 100 or 50 milliamps, until respiration is re-established. An oxygen mask may be applied during the clonic contractions. The current is then raised after about 60 or 80 seconds to a level just sufficient to maintain unconsciousness, this may vary from 80 to 135 milliamps. Voluntary movements indicate that the current is too low and if this occurs it may be raised even to a point of grand mal if necessary, rather than to allow brief consciousness and later again to a slightly higher level than previously. A narcosis is maintained from 1 to 9 minutes; 5 minutes seems adequate for a treatment. The first treatment is usually short in order to estimate the individual dosage.

At the end of the session the patient is turned on to the right side to encourage unobstructed breathing while the effects of the flaxedil wear off. The bed is then wheeled out into a recovery ward, where a ward sister carries on observation until the patient recovers. All the beds used for treatment are on wheels which saves a lot of time.

RESULTS OF TREATMENT

Schizophrenia. Forty-three patients were treated, and of these 34 recovered, 6 improved and 3 were much improved. Of the 34 recoveries, 5 relapsed, of the 6 improved all relapsed and of the 3 much improved follow-up showed the same result. The results here compare favourably with insulin coma treatment and are definitely superior to E.C.T. There was an excellent response in two cases of confusional psychosis.

One case of puerperal psychosis recovered.

Psychopathy. Intermittent E.N.T. was useful in curbing execessive hostility and aggressiveness and restoring normal sleep. There was no particular advantage in giving prolonged courses.

Melancholia. Seventy-six melancholics were treated; 69 cases recovered and a follow-up at least 1 year later showed that 54 maintained recovery. The remainder could not be traced. The average number of E.N.T.'s was 7, the least 2 and the highest 13.

Of the 7 failures, one was a male of 78 with sclerotic arteries, who improved after 9 treatments, but soon relapsed. One, a female of 73, failed to maintain improvement after a third course. A boy of 17 refused to continue after the third treatment; he was transferred to another hospital and reported to have committed suicide. In one patient treatment was contra-indicated because of failure of compensation of heart, the risk was considered too big to continue. One resisted treatment and had to be certified and transferred. One was a hypochondriacal melancholia with emphysema, who became very cyanosed under treatment and it was considered too risky to continue. A male aged 70, with hypochondriacal melancholia did not improve with treatment.

Neurosis. Of 11 cases of anxiety neurosis, results with E.N.T. were satisfactory. The E.N.T. was useful in establishing strong rapport and reducing psychotherapy to negligible proportions in many cases. As they were all 'in-patients' and full advantage was taken of recreational and occupational therapies, E.N.T. could only be regarded as a part of the scheme of treatment, although a very useful part, and it seems doubtful whether the good results could have been obtained without it in the time available.

The results in anxiety hysteria were poor; only 3 out of 11 treated under similar conditions responded satisfactorily. All of the 8 cases of depressive psychoneurosis recovered and remained well up to the date of writing.

Of 3 obsessional neuroses, 2 of the 3 recovered and remained well.

Migraine. Five cases of migraine were treated. Immediate results were good. In a follow-up of 2 cases over a period of a year there was no recurrence of migraine. To quote one case: patient X had severe attacks weekly. These lasted 3 days during which time she had to remain in bed. The attacks occurred regularly over a period of about 30 years. After the fourth E.N.T. the migraine cleared up. Follow-up a year later—the patient was still free of headache and very grateful for the result. This patient was having maintenance treatment with E.N.T. on account of chronic paraphrenia during the year.

Patient Y had 6 E.N.T.'s for migraine. Previous to treatment attacks occurred weekly. After E.N.T. she was entirely free of attacks for 2 months; symptoms then gradually returned. Six months later the attacks were mild and less frequent, and contrary to previous experience responded easily to aspirin.

Further investigation is indicated.

Anaesthesia. Minor operations can be satisfactorily done under E.N.T. In one case 8 teeth were extracted and the dentist remarked that bleeding was minimal. One case of fibrous hymen was incised and dilated.

FURTHER COMMENTS

Among the recoveries in depression, there was one patient who had had E.C.T., with an anxiety state as a complication. E.N.T. cleared the condition completely. A patient who had phobias after 20 E.C.T.'s, made a complete recovery with E.N.T.

Among the 69 recoveries, there were 9 hyprochondriacal melancholics, and of these 5 recovered, 1 improved and 2 were failures. This is in marked contrast with the results of E.C.T.

Where pseudocausalgic symptoms were prominent results with E.N.T. were dramatic.

In depression the average number of treatments was lower with E.N.T.

In almost every case receiving E.N.T. and subcoma, it was found that subcoma occurred on 10 units less the day following the E.N.T. It has become a routine procedure to drop the subcoma dose by 10 units the day following the E.N.T.

In all types of cases E.N.T. was almost specific for insomnia and was particularly useful in restoring normal sleep in alcoholics and in those suffering from persistent insomnia following the prolonged use of barbiturates.

The fact that so many varied conditions respond to

E.N.T. suggests a central point of action such as the hypothalamus. There is evidence to show that there is an increase of density of current in the C.S.F. in the third ventricle. As the sleep centres are in this neighbourhood it is possible that they are directly stimulated (strongly).

COMPLICATIONS

There were no deaths from E.N.T. In two cases of emphysema, treatment had to be abandoned because of extremely poor oxygenation. Two patients had uncompensated cardiac disease and treatment was discontinued because of the dangerous symptoms exhibited during E.N.T., as it was felt that extremely poor heart action presented a considerable risk.

Two cases had an exacerbation of their psychosis lasting weeks; both subsequently recovered.

In 3,000 treatments on 212 patients there were no orthopaedic complications.

Certain patients complained of headaches after treatment; these usually cleared up but if persistent, tablets of A.P.C. were given, but as a rule there were no headaches the day after treatment.

In cases where oxygen under pressure by means of a nasal tube was given, some temporary bleeding of the nasal mucosa occurred or discomfort of the pharynx was complained of.

It was a disturbing feature in the early cases of the series when a patient became conscious during E.N.T., or if the patient was not completely unconscious. This resulted in intense fear of the treatment. Fortunately with improved technique this has become a rarity.

Several patients developed thrombosed veins at the point of injection, but this did not interrupt treatment.

Amnesia. There was very much less amnesia after E.N.T. as compared with E.C.T. This is in keeping with findings of other writers. When a very short E.N.T. was given, say for half a minute, there was often marked amnesia and confusion, but if the patient was given a long E.N.T. for many minutes the amnesia and confusion cleared up. A short E.N.T. like this was sometimes deliberately given when a patient had been disturbed or upset about something in the nursing home, with the intention of eliminating the memory. There is also much less, and sometimes no confusion after E.N.T. in contrast with E.C.T. A significant feature is that a long E.N.T. improves the memory produced by a short E.N.T. or E.C.T. This suggests that the memory is not impaired in an organic way but that the amnesia is due to a different awareness of the memory content. In other words—only recall is affected, retention of memory is relatively unaffected. Leo Alexander [4] expressed the opinion that sub-convulsive shock improves the memory when amnesia has been caused by E.C.T.

This has been a useful basis of reassuring a patient about amnesia which can sometimes be disturbing to them. The explanation usually given is the following: that if there are a number of articles in a room which have been rearranged after tidying up by an industrious housewife, the husband may find it difficult to lay his hands on various articles which are not in their accustomed places, although none of them have been removed.

CONCLUSIONS

Some tentative conclusions have been arrived at after 3½ years' experience with E.N.T.

In early schizophrenia results with E.N.T. compare favourably with insulin coma. The encouraging results and relative safety indicates a more extensive trial in early schizophrenia. Long standing cases are only temporarily influenced.

In experienced hands E.N.T. is as safe as E.C.T. and safer than insulin coma.

Cases of anxiety neurosis and depressive neurosis are considered good subjects for E.N.T. There is much less shock, confusion and amnesia, and concomitant psychotherapy is possible and contributes largely to the success of treatment in many cases.

With increasing confidence and experience in the technique, treatment has been extended to more senile cases.

E.N.T. is more effective than E.C.T. in cases with more resistent psychotic organisation.

E.N.T. is almost specific in restoring normal sleep.

Disadvantages. The treatment is time consuming and requires adequate trained personnel. Occasional thrombosed veins occur at the site of injection.

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PASSING EVENTS

FIRST WORLD CONGRESS ON FERTILITY AND STERILITY

The First World Congress on Fertility and Sterility will be held on 25-31 May 1953 at the Henry Hudson Hotel in New York City. This Congress is sponsored by the International Fertility Association with the cooperation of the American Society for the Study of Sterility.

Twenty-three scientific sessions are to be held, which will embrace the entire field of fertility and sterility, including sessions dealing with socio-economic factors, psychosomatic aspects and artificial insemination. The sessions will be conducted in English, French and Spanish, with the use of earphones and simultaneous translations, as in the United Nations meetings.

In addition to the scientific sessions there will be medical round table discussions, question and answer periods, scientific exhibits and motion pictures.

It is anticipated that 1,800 scientists from 51 countries will attend the Congress, making it the world's largest medical meeting devoted to prob'ems of reproduction. This Congress will facilitate the exchange of ideas and information among doctors from the various countries, dealing with the very latest findings in fertility studies.

Since seats at the Congress will be at a premium, it is

suggested that those who plan to attend write as soon as possible to the Chairman of the Local Arrangements Committee, 1160 Fifth Avenue, New York 29, New York, for advance registration.

A GUIDE TO MEDICAL WRITING

Menley & James (Colonial) Limited, of P.O. Box 784, Port Elizabeth, have issued a very elegantly produced booklet entitled *The Preparation and Writing of Medical Papers for Publication*, by Dr. W. R. Bett. Professor Sir Francis R. Fraser, Director of the British Post-Graduate Medical Federation, has contributed a preface.

The booklet contains useful hints to potential authors and should be regarded as supplementary to that classic in this field, viz. *Medical Writing* by Dr. Morris Fishbein, published by the Blakiston Co. It should also be read in conjunction with an interesting and instructive article entitled *Joint Enterprise: an Open Letter to our Contributors* (from Editor to Authors), published in the *Journal of the International College of Surgeons*, Vol. 14, Nos. 3–5, 1950.

Copies of Dr. Bett's pamphlet are available on application to Menley & James (Colonial) Limited, P.O. Box 784, Port Elizabeth.

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Dr. T. A. Fuller, formerly head of the Department of Anaesthetics, Groote Schuur Hospital, Observatory, C.P., has resumed private practice as a specialist anaesthetist.

Rooms: 7, Eastley Flats, Claremont, C.P. Telephone: 7-7245.

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Dr. Morris J. Cohen has been invited by the Africana Museum, Johannesburg, to stage a show of his shell-craft sculpture. This will be held from 15 February to 28 February 1953, and will include some of the items exhibited at the recent Medical Congress in Johannesburg, as well as new figurines.

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

VACANCY FOR EDITOR

Applications are invited from registered medical practitioners for the post of Editor of the South African Medical Journal and the South African Journal of Clinical Science. The salary scale is £1,500 × 50—£2,000 plus cost-of-living allowance at Public Service rates. The post is full-time and the successful applicant will be required to work at the Association's Head Office in Cape Town.

Applicants should state their experience and whether they are fully bilingual.

Applications should be addressed to the undersigned and should reach him before 31 January 1953.

A. H. Tonkin,
Secretary.

Medical House
35 Wale Street,
Cape Town.
24 October 1952.

VAKATURE VIR REDAKTEUR

Aansoeke van geregistreerde geneeshere vir die vakante betrekking van Redakteur van die Suid-Afrikaanse Tydskrif vir Geneeskunde en die Suid-Afrikaanse Tydskrif vir Kliniese Wetenskap word ingewag. Die salarisskaal is £1,500 × 50—£2,000 plus duurtetoeslag volgens Staatsdienstarief. Dit is 'n voltydse betrekking en die aangestelde persoon sal verwag word om by die Vereniging se Hoofkantoor in Kaapstad werksaam te wees.

Applikante moet vermeld watter ondervinding hulle het en of hulle volkome tweetalig is.

Aansoeke moet gerig word aan die ondergetekende en moet hom voor 31 Januarie 1953 bereik.

A. H. Tonkin,
Sekretaris.

Mediese Huis,
Waalstraat 35,
Kaapstad.
24 Oktober 1952.

BOOK REVIEW

DR. NEIL MACVICAR

A South African Medical Pioneer. The Life of Neil Macvicar, M.D., D.P.H., LL.D. By R. H. W. Shepherd. (Pp. 249 with 8 illustrations. 10s. 6d.) Lovedale: The Lovedale Press, C.P.

Contents: 1. Early Days. 2. Edinburgh University Days. 3. Blantyre Mission. 4. At Work in Blantyre. 5. Dismissed. 6. Lovedale. 7. First Years at Lovedale. 8. The Training of African Nurses. 9. The Health Society. 10. The Educationist. 11. Widening Service. 12. Retirement. 13. Work in Retirement. 14. Some Letters. 15. His Faith. 16. The Man Himself. 17. His Passing. Appendices.

This book, ably written by the Principal of Lovedale, is not only the record of a remarkable man, but also an invaluable contribution to the history of the development of health services among the Bantu. Macvicar was the best student of his year (1894) at Edinburgh University. After 4 years at Blantyre, in 1902, he commenced his life's work at the Victoria Hospital, Lovedale. His book on *Tuberculosis among South African Natives*, published in 1908, is a classic in its field.

But his greatest contribution to South African health services was his pioneer work in the training of Bantu women as fully qualified nurses. The key to his success is contained in the tribute paid by the nurses themselves to their teacher: 'We are what we are because you trusted us'. Macvicar's other great contribution was the founding of the South African Health Society in 1909 and its organ, the *Health Magazine*, in 1914. Both are still flourishing as effective agents in the health education of the Bantu.

After his retirement in 1937 Macvicar devoted himself to the writing of articles and booklets covering the whole field of Native welfare in South Africa. He died in 1949.

CORRESPONDENCE

RESIGNATION OF THE EDITOR

To the Editor: In your *Journal* there appears from week to week a communication from the Secretary of the Medical Association inviting applications for the post of Editor to the *Journal*.

I trust and hope that this communication will shortly cease to appear for the reason that those responsible for having accepted your resignation will have reversed their decision, and that you, in turn, will have reversed yours. Your rightful place in the medical profession in this country will thus have been restored, to the benefit of all.

M. M. Suzman, M.D., M.R.C.P.

89 Jenner Chambers,
Jeppe Street,
Johannesburg.
17 December 1952.

City of Germiston

VACANCY: BANTU MEDICAL OFFICER

Applications are hereby invited from Bantu medical practitioners, registered with the S.A. Medical Council, for the vacant position of Bantu Medical Officer in this Council's Native Townships, on the salary grade £600 × 25—£750 plus a temporary statutory cost-of-living allowance which at present amounts to £144 6s. per annum.

The successful applicant will be required to serve a probationary period of 12 months, to reside in the Natalspruit Native Township and to provide a satisfactory medical certificate of fitness issued by the Council's Medical Officer of Health.

Applications stating age, marital status, qualifications, experience, earliest date upon which duty can be assumed, and accompanied by copies of not more than three recent testimonials must reach the undersigned not later than 12 noon on Friday 16 January 1953.

Details in regard to duties, etc. may be obtained from the Council's Medical Officer of Health.

Canvassing for the appointment in the gift of the Council is strictly prohibited, and proof thereof will disqualify any candidate.

H. S. Miller
Town Clerk

Municipal Offices
Germiston
19 December 1952 No. 237

Stad Germiston

VAKATURE: NIEBLANKE GENEESHEER

Aansoeke word van nieblanke mediese praktisyns by die S.A. Mediese Raad registreer, aangevra om die vakante betrekking van nieblanke geneesheer in hierdie Stadsraad se naturelledorpe, op die salarisskaal £600 × 25—£750 plus 'n tydelike wetlike duurtetoelae, tans £144 6s. per jaar.

Van die gekose kandidaat word verwag om 'n proefdienstydperk van twaalf maande te deurloop, in die naturelledorp Natalspruit te woon en om 'n sertifikaat van goeie gesondheid deur die Stadsgeneesheer uitgereik, voor te lê.

Aansoeke met vermelding van ouderdom, huwelikstaat, kwalifikasies, ondervinding, vroegste datum waarop diens aanvaar kan word en vergesel van afskrifte van hoogstens drie onlangse getuigskrifte, moet die ondergetekende op sy laatste Vrydagmiddag, 16 Januarie 1953 om 12-uur bereik.

Besonderhede betreffende pligte e.d.m. is by die Stadsgeneesheer verkrygbaar.

Persoonlike stemwerwing om aanstelling in betrekkings waaroor die Raad beskik, word verbied en bewyslewering daarvan sal 'n kandidaat van benoeming uitsluit.

H. S. Miller
Stadsklerk

Stadskantore
Germiston
19 Desember 1952 Nr. 237

Assistant Required

An assistant (with view to partnership) is required for a Southern Rhodesian city practice. The applicant should have had 3–4 years of experience in general practice. Further details are obtainable on application to 'A. O. Y.', P.O. Box 643, Cape Town.

The Medical Association of South Africa : Die Mediese Vereniging van Suid-Afrika

AGENCY DEPARTMENT : AGENTSKAP-AFDELING

JOHANNESBURG

Medical House, 5 Esselen Street. Telephone 44-9134-5, 44-0817
Mediese Huis, Esselenstraat 5. Telefone 44-9134-5, 44-0817

LOCUM POSTS AND ASSISTANTSHIPS AVAILABLE
PLAASVERVANGERS- EN ASSISTENTSKAPPE BESKIKBAAR

(L/V280) An inexperienced assistant wanted for a partnership practice in Johannesburg. Comfortable quarters provided, free board and lodging, and petrol and oil. Salary £60 to £70 per month.

(L/V301) Johannesburg partnership practice. Locum for February. Salary £3 3s. per day, free board and lodging, free petrol and oil and car allowance of £10 p.m. Must be bilingual.

(L/V282) Eastern Transvaal. Locum required for a month as from 15 January. Salary £2 2s. to £2 12s. 6d. per day, according to experience. Free board and lodging and 1st class return fare. 1s. per mile will be allowed if own car is used.

(L/V309) Oos-Transvaal. Plaasvervanger vir Januarie. Salaris £2 12s. 6d. per dag, vry losies en inwoning en 7d. per myl rytoelae, indien eie kar gebruik word.

(L/V312) An assistant wanted for a partnership practice on the Reef. Anaesthetics experience a recommendation. Must have his own car. Starting 15 January or 1 February.

(L/V314) Eastern Transvaal mine hospital. Locum for the month of January. Salary £3 3s. per day, free board and lodging. A car will be provided. Knowledge of Afrikaans not essential.

(L/V315) Oos-Transvaal. Plaasvervanger benodig vanaf 15 Januarie tot 15 Februarie. Salaris £2 12s. 6d. per dag, vry losies en petrol en olie. Baie min nagwerk.

(L/V319) O.V.S. Plaasvervanger vir Maartmaand. Salaris £2 12s. 6d. per dag, vry losies en inwoning en rytoelae teen 1s. per myl. Min nagwerk. Moet eie kar gebruik.

(L/V325) Southern Rhodesia. Locum for 3 months as from 1 March. Salary £3 3s. per day, full board and lodging, car expenses and travelling expenses paid both ways. Own car not essential but preferable.

(L/V326) Transvaal town near Johannesburg. Locum as from 19 January for one month. Salary £3 3s. per day, free board and lodging and transport allowance of £27 10s. p.m. Locum must have own car.

(L/V328) O.F.S. Locum for one month as from 15 January. Salary £3 3s. per day, free board and lodging. Car can be provided.

* * * *

KAAPSTAD : CAPE TOWN

Posbus 643, Telefoon 2-6177 : P.O. Box 643, Telephone 2-6177

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(1010) Cape Town. Nucleus of practice with excellent scope for expansion. Average annual receipts £1,100. Premium required, £850, which includes drugs, few instruments, half-share furniture. Consulting rooms shared with specialist.

(1016) Eastern Province. Unopposed solus practice. Average annual receipts £2,471. Premium for goodwill £750. Drugs, furniture and instruments offered at £190. Terms available. Attractive modern home to rent at £8 10s. p.m. Rental roomy surgery, £3 p.m.

(992) South-Eastern Cape hospital town. Premium required £1,500, which includes drugs, furniture and instruments worth approximately £1,350. Flat plus surgery to let at £6 p.m. Gross average annual cash takings, £2,500. Easy terms. Owner wishes to specialize.

(1177) Boland. Uitstekende praktyk binne 100 myl van Kaapstad. Twee aanstellings. Kontantontvangste ongeveer £5,000 per jaar. Premie verlang £2,500. Terme beskikbaar. Goeie vooruitsig vir uitbreiding as snywerk gedoen word. Huis te koop teen £3,500. Verband moontlik.

(1229) Northern Cape Province hospital town. Partnership share. Cash takings £3,530. Premium for half share £1,500 (includes half share in furniture, drugs and instruments), £750 cash, balance on terms without payment of interest. *Prospects for expansion are excellent.*

ASSISTENTE/PLAASVERVANGERS VERLANG
ASSISTENTS/LOCUMS REQUIRED

(1167) Namaqualand. 'n Afrikaanssprekende assistent. Moterkar word voorsien.

MICROSCOPE FOR SALE

(1223) Reickert. High and lower power. Practically new, £55.

FOR SALE

(1071) High-frequency diathermy set (Lepel). £30.
(772) Strand, C.P. Instrument cabinet, desk. Cape Town. Set of 12 bougies. £2.
(674) Becker Microscope, with oil immersion lens. *British Encyclopaedia of Medical Practice*, £5.
(925) Baumanometer, £7. Ovum Forceps, 15s. Set 9 Metal Catheters, £4 5s., etc.
(909) Slit Nitra Lamp (Prof. Gullstrand's). Good working order. £20 or nearest offer.
(961) Minnitt Gas and Air Apparatus. Practically new.

* * * *

DURBAN

112 Medical Centre, Field Street. Telephone 24049

PRACTICES FOR SALE : PRAKTYKE TE KOOP

(PD14) Non-European dispensing practice in rapidly expanding industrial and residential area, 11 miles from centre of coastal City. At present no night or after hour calls, no week-end or surgical work undertaken. Practice could be improved if run on a full-time basis, otherwise ideal as a subsidiary practice. Turnover for twelve months ended 31 June 1952 averaged £170 per month. Total expenses including car and travelling expenses, £50 to £60 per month. Premium £750 including drugs, instruments and furniture.

(PD15) General practice established 1941 at pleasant residential and seaside resort about 10 miles south of Durban. Annual income approximately £1,000. No major surgery, minimum of minor surgery and only emergency midwifery being done at present. Brick house with consulting room attached, for sale at £5,250. Owing to ill health owner wishes to retire early in the new year. Premium £1,250 including drugs, surgery and dispensary furniture.

(PD16) General practice in Pietermaritzburg. Centrally situated European and non-European consulting rooms. Scope for surgery and midwifery. For immediate sale at £750 including drugs, surgery furniture.

LOCUM REQUIRED

(122) Pondoland. From 1 December 1952 to 30 June 1954. Partnership practice and the senior partner will be remaining in the practice. The partners do not work after 4.30 p.m.

during the week and 1 p.m. on Saturday. Mostly Native work. Salary £60–£75 per month, depending on experience, plus free board and lodging, and transport allowance, if locum uses his own car.

(106) Zululand. From 30 December to 30 January 1953. £2 12s. 6d. per day, car allowance. Single man or woman. Must possess own car. General country practice. Senior partner of the firm will be present throughout, living 8 miles away.

(116) Near Durban. January 1953. £2 12s. 6d. per day, board, lodging. Own car desirable. Afrikaans essential. Mixed general practice, with R.M.O. appointment.

(120) Near Durban. From 1 January 1953 for approximately 14 days. £2 12s. 6d. per day, board and lodging and car expenses. Locum should possess his own car. Must be able to dispense as this is a mixed general dispensing practice for non-Europeans only. Not much night work. Suitable for elderly man.

(123) East Griqualand. From 1 January for one month. £2 12s. 6d. per day, free board and lodging and car allowance. Locum must possess his own car. This is a general practice with small R.M.O. and D.S. appointments. Very occasional night and week-end work. No major surgery. One weekly district clinic tour.

(124) From 15 to 28 January. Natal country practice. Locum should possess own car. £3 3s. per day, all found.

South African Railways and Harbours Sick Fund

APPOINTMENT OF RAILWAY MEDICAL OFFICER: PORT ELIZABETH DISTRICT 'E'

Applications are invited from registered medical practitioners for appointment to the position of Railway Medical Officer, Port Elizabeth District 'E', at a salary of £787 per annum, plus the fees and allowances prescribed by the Regulations of the Sick Fund and with the right of private practice.

The salary will be subject to adjustment in accordance with the census of members to be taken on 1 April of each year.

The appointment will be made in terms of the Regulations of the Fund, and will be subject to termination on four months' notice being given by either side.

The successful candidate will be required to reside within the medical district of Port Elizabeth, to take up appointment on a date to be arranged, and to carry out his duties in accordance with the Regulations of the Fund.

Applications should reach the District Secretary, Cape Midland District Sick Fund Board, 116 Mutual Arcade, Port Elizabeth not later than 26 January 1953, and should state:

1. Full name.
2. Qualifications (when and where obtained).
3. Experience (when and where obtained).
4. Date of birth.
5. Country of birth.
6. Whether married or single.
7. Whether fully bilingual.
8. Whether South African citizen.
9. What Government appointment, if any, is held.

Canvassing by or on behalf of any applicant is liable to disqualify such applicant.

Any further particulars may be obtained from the District Secretary at the above address, on application.

P. J. Klem
General Secretary

Johannesburg
10 January 1953

Wanted

General practitioner required for Mission Hospital in Native area, with medical, surgical, maternity and T.B. cases. Apply, giving full particulars about previous appointments and general experience. Duties to commence immediately.

Apply to Secretary, St. Konrad's Hospital, Taungs, C.P.

Siekefonds van die Suid-Afrikaanse Spoorweë en Hawens

AANSTELLING VAN SPOORWEGDOKTER: KROONSTAD 'B'

Applikasies word van geregistreerde mediese praktisyns ingewag vir aanstelling in die betrekking van Spoorwegdokter, Kroonstad 'B' en vir die spoorwegtrajek Kroonstad (uitsluitend) tot by Hennenman (uitsluitend) tot by Heuningsspruit (insluitend) tot by Oosthuizen (insluitend) en tot by Rustig (insluitend), teen 'n salaris van £1,190 per jaar, en 'n chirurgiese toelae van £150 per jaar, plus die gelde en toelaes wat in die Regulasies van die Siekefonds voorgeskryf word, en met die reg om privaat te praktiseer.

Dit sal ook van die suksesvolle applikant verwag word om die leerlinge by die Spoorwegopleidingskollege, Kroonstad, te behandel, waarvoor hy maandeliks 9d. per student sal ontvang en alle nie-Blanke dienare van die Administrasie teen 'n maandelikse hoofdelike tarief van 6d. per nie-Blanke, plus vervoertoelae van £120 per jaar, ten opsigte van besoeke aan die kollege en chirurgiese toelae van £30 per jaar ten opsigte van operasies wat op studente uitgevoer word.

Die salaris is onderhewig aan wysiging in ooreenstemming met die sensus van lede wat op 1 April van elke jaar afgeneem moet word.

Die pligte van die chirurgie ten opsigte waarvan die toelae van £150 per jaar betaal word, word tans hersien en sal onderhewig wees aan wysiging ooreenkomstig enige beslissing waartoe in verband daarmee geraak word.

Die aanstelling geskied kragtens die regulasies van die Siekefonds, en opsegging van dienste is onderworpe aan vier maande kennisgewing deur een van beide partye.

Die suksesvolle applikant moet op Kroonstad woon, en dienste op 'n datum wat gereël sal word aanvaar, en sy pligte ooreenkomstig die regulasies van die Siekefonds uitvoer.

Aansoeke moet die Distriksekretaris, Oranje-Vrystaatse Distriksiekefondsraad, Charlesstraat 2, Bloemfontein, nie later nie as 31 Januarie 1953 bereik, en applikante moet die volgende vermeld:

1. Volle naam.
2. Kwalifikasies (waar en wanneer verkry).
3. Ondervinding (waar en wanneer verkry en opgedoen).
4. Datum van geboorte.
5. Land van geboorte.
6. Getroud of ongetroud.
7. Of ten volle tweetalig.
8. Of Suid-Afrikaanse burger.
9. Watter staatsbetrekking, indien enige, beklee word.

Werwing deur of ten behoewe van enige applikant stel so 'n applikant bloot aan diskwalifikasie.

Enige verder besonderhede wat verlang word, kan op aanvraag van die Distriksekretaris by bovermelde adres verkry word.

P. J. Klem
Hoofsekretaris

Johannesburg
10 Januarie 1953

National Industrial Council of the Leather Industry of South Africa: Sick Benefit Fund

Applications are invited from medical practitioners in practice in George, C.P., for the position of Part-time Fund Medical Officers to the Fund mentioned above.

Full details of conditions of appointment may be obtained on application to the Secretary of the Fund, P.O. Box 3051, Port Elizabeth.

[Before submitting applications for this post, practitioners are advised to communicate with the Honorary Secretary, South Eastern Division (M.A.S.A.), 118 York Street, George.—*Editor.*]

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

HOSPITAL BOARD SERVICE : VACANCIES

Applications are invited for the undermentioned vacant posts in the Hospital Board Service.

The appointment of the successful candidates will be made in terms of, and be subject to, the Hospital Board Service Ordinance, 1941 (Ordinance No. 19 of 1941) and the regulations framed thereunder.

In addition to the emoluments specified hereunder, cost-of-living allowance is payable to whole-time officials and employees.

Applications should be submitted (in duplicate) on the prescribed form Staff 23, which is obtainable from the Director of Hospital Services, P.O. Box 2060, Provincial Building, Wale Street, Cape Town, or from the Branch Representative, of the Hospital Department at Cape Town (P.O. Box 1487), Port Elizabeth (P.O. Box 80), East London (P.O. Box 13), Kimberley (P.O. Box 618) and Umtata (P.O. Box 202), or from the Medical Superintendent of any Provincial Hospital or Secretary of any School Board in the Cape Province.

The closing date for the receipt of applications is 30 January, 1953, and applications should be addressed to the Branch Representative, Hospitals Department, P.O. Box 1487, Cape Town.

Institution	*Post*	*Emoluments*
Victoria Hospital, Wynberg	Medical Practitioner, Grade "A"	£500—600—660—720 per annum

(1) Institution approved for specialist training.
(2) Candidates must have at least three years' experience after having received their grade or two years' experience after registration.
(3) The contract will be for a period of two years and the Administration reserves the right to extend the period for a further two years.

36374

Witwatersrand Native Labour Association, Limited

Applications are invited from registered medical practitioners for appointment as full-time Medical Officer to the Association at its Pafuri Depot in the North Eastern Transvaal.

The salary attaching to the post is £900 per annum plus cost-of-living allowance on the Chamber of Mines scale (which is at present approximately £20 per month). In addition, a free house is available.

This is a position that would be eminently suitable for an elderly or retired medical practitioner.

The date upon which the successful applicant will be required to commence duty will be a matter for discussion, but it is anticipated that this will be approximately 1 March 1953.

Applications, addressed to the Association's Chief Medical Officer, P.O. Box 1198, Johannesburg, will be received up to noon on Wednesday, 21 January 1953.

Practice for Sale

Eastern Cape, dispensing practice in town with recently opened small hospital. Goodwill, drugs, furniture, instruments, at £1,250. Newly installed X-ray equipment for sale separately at £1,150. Roomy surgery rented. Gross income about £2,300. House for sale at £3,000. Owner intends studying further. Write 'A. O. E.', P.O. Box 643, Cape Town.

Department of Mines

VACANCY FOR RADIOLOGIST

Applications are invited for appointment on contract, for a period of three years renewable on the recommendation of the Public Service Commission, as radiologist on the establishment of the Silicosis Medical Bureau, Johannesburg, with salary at the rate of £1,850 per annum fixed. Cost-of-living allowance at Public Service rates at present amounting to £320 per annum in the case of married and £100 per annum in the case of single officers, is also payable.

Candidates must be South African citizens or citizens of a Commonwealth country or citizens of the Republic of Ireland, bilingual and have resided in the Union of South Africa or in South West Africa for at least three years and be registered with the South African Medical and Dental Council as medical practitioners and be fully qualified radiologists in possession of a diploma in medical radiology.

Applicants must submit full and detailed particulars of their qualifications and previous experience but original certificates and testimonials should not be submitted in the first instance. The successful candidate will be required to submit satisfactory certificates of birth and health.

Application must be made on the prescribed forms Z.83 and P.S.C.8(a) which are obtainable from the Secretary for Mines, New Standard Bank Buildings, Church Square, Pretoria, to whom completed forms must be addressed.

Closing date 31 January 1953. (38936)

Departement van Mynwese

VAKATURE VIR RADIOLOOG

Aansoeke word gevra om aanstelling op kontrak vir 'n tydperk van drie jaar, wat op aanbeveling van die Staatsdienskommissie hernu kan word, as radioloog op die diensstaat van die Mediese Silikoseburo, Johannesburg, met 'n vaste salaris van £1,850 per jaar. Lewenskostetoelae teen die Staatsdienstarief wat op die oomblik £320 per jaar in die geval van getroude en £100 per jaar in die geval van ongetroude beamptes bedra, is ook betaalbaar.

Kandidate moet Suid-Afrikaanse burgers of burgers van 'n Statebondsland of burgers van die Republiek Ierland en tweetalig wees en moet minstens drie jaar in die Unie van Suid-Afrika of in Suidwes-Afrika gewoon het en geregistreer wees as mediese praktisyn by die Suid-Afrikaanse Geneeskundige en Tandheelkundige Raad en moet behoorlik gekwalifiseerde radioloë wees in besit van 'n Diploma in Mediese Radiologie.

Applikante moet volledige besonderhede betreffende kwalifikasies en vorige ondervinding verstrek maar oorspronklike sertifikate en getuigskrifte moet nie in die eerste plek ingedien word nie. Die suksesvolle kandidaat moet bevredigende geboorte- en gesondheidsertifikate indien.

Aansoek moet gedoen word op die voorgeskrewe vorms Z.83 en S.D.K.8(a) wat verkrygbaar is van die Sekretaris van Mynwese, Nuwe Standaardbank-gebou, Kerkplein, Pretoria, aan wie ingevulde vorms gerig moet word.

Sluitingsdatum 31 Januarie 1953. (38936)

Partnership Wanted

Married Jewish doctor, aged 30, requires partnership in well-established practice. Commencing 1 February 1953. Write 'A. O. S.', P.O. Box 643, Cape Town.

Printed by Cape Times Ltd., Parow, and Published by the Proprietors, THE MEDICAL ASSOCIATION OF SOUTH AFRICA, MEDICAL HOUSE, 35 Wale Street, Cape Town. P.O. Box 643. Telephone 2-6177. Telegrams: 'Medical'